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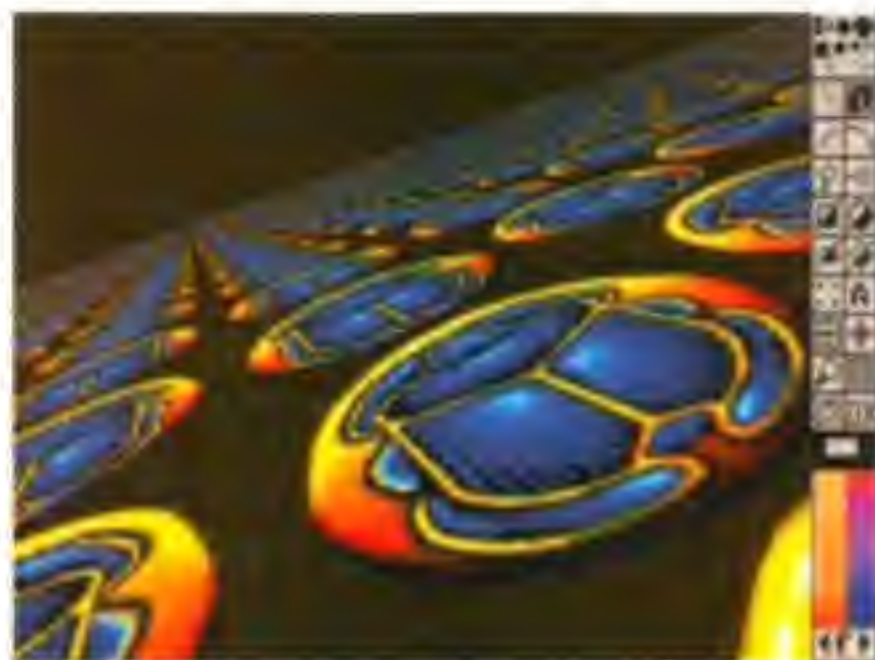
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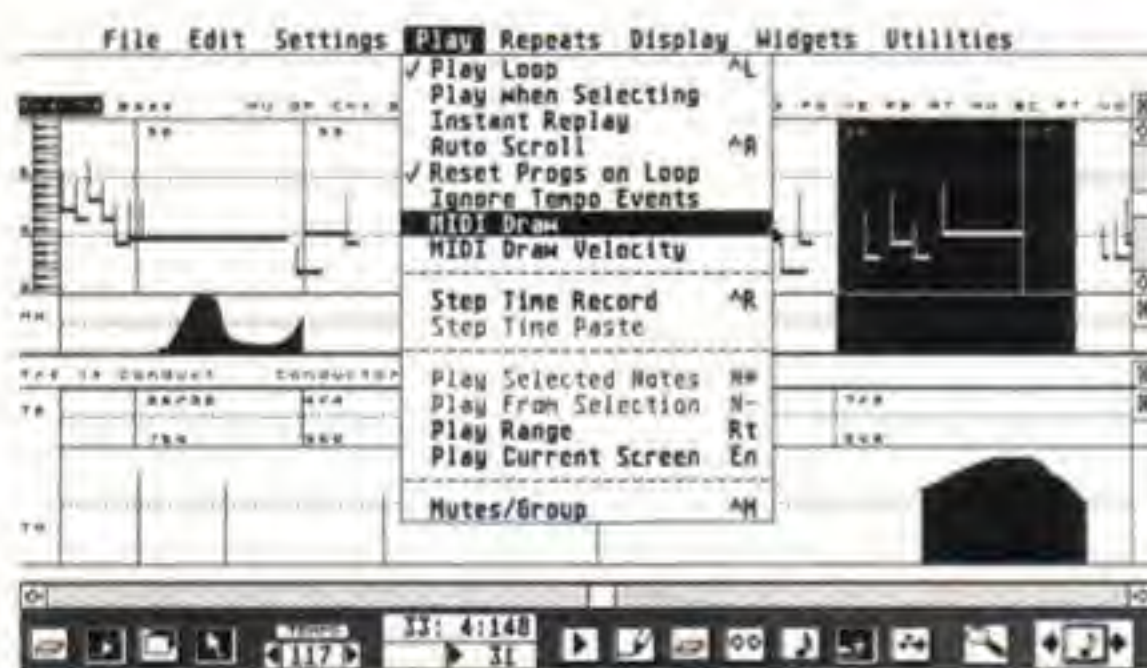
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92 % Dec 1991



Tiger Editing screen from KCS

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Paul Overraa, Sound On Sound Oct. 91

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Paul Overraa Oct 91 Amiga User International

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This new Dr T offering is a real heavyweight and is on a par with those found in the Apple Mac and Atari ST Worlds. The environment offers the same type of integration and ease of use as that found on the Mac. This is going to please the vast numbers of Amiga MIDI musicians who have been waiting for something stunning and professionally useful to happen in the Amiga music world.

Oct 91 Amiga User International

If you're serious about creating music, then KCS 3.5 is probably the most comprehensive, flexible and powerful sequencing and editing system you can buy.

Maff Evans DEC 91 Amiga Format (Gold Award 92%)

IMPORTANT MESSAGE

ZONE Distribution, specialists in computer music software, are exclusive UK distributors for Dr T's Music Software. ALL Registered UK Users receive a full technical support service from expert staff. REMEMBER unless you buy from an authorised dealer we cannot provide that support and you are unprotected.

* Subject to availability. Offer ends Jan 31 1992. KCS normal RRP £279 inc vat. Total saving £100 or £130 respectively. Original Disks must be returned to qualify.

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AFIAN

JOIN THE RHYTHM OF MACHINES

THOSE OF YOU old enough to remember *Tomorrow's World* in the 1970s may recall 'revolutionary' musicians Kraftwerk showing off their new breed of electronic music. The ideas involved may have seemed remarkable at the time, but to the youth of today, who have grown up with tunes involving synthesisers, samplers and sequencers as a matter of course, Kraftwerk's particular brand of quirky European bleeps must seem positively archaic.

The revolution in electronic music has been surprisingly rapid, with new and improved technology appearing just about every month. These new machines have also brought about a change in the approach to creating music. No longer is the pop world only open to those that have spent years mastering an instrument or the usual crop of fresh-faced 'here today, gone tomorrow' singers that get snapped up by the record companies. These days anyone with a little imagination and a small amount of money can get involved, thanks to the advent of home computers and Musical Instrument Digital Interface or simply MIDI.

SEQUENCE OF EVENTS

The idea behind the sequencer is to allow you to construct and store songs electronically. Using a sequencer you can also edit the notes of a song, shift patterns around and try different combinations of instruments - all before you commit anything to tape.

In the mid-to-late 70s, before the dawn of MIDI, a few sequencers were already available. These worked by sending pulses of electricity to compatible instruments, the voltage of the bursts controlling the note to be played. This was a rather primitive system and musicians began crying out for a more effective way of controlling their synths and drum boxes. The solution was the introduction of MIDI.

So what is this MIDI thing? It's actually a communication standard which allows instruments to send messages to each other, so that you can play songs on one keyboard (or construct them on a sequencer) and actually use sounds on another machine. To begin with it was simply used by musicians to build up banks of sounds using various machines, allowing them to create complex layers of music.

Although dedicated sequencer modules were available (such as the Roland MC500) the big leap forward in MIDI was the release of the Atari ST. The fact that the ST had a built-in MIDI interface put forward the idea that you could use computers for sequencing. Soon enough, add-on MIDI interfaces for just about all other computers began to appear, enabling almost anyone to start creating electronic music (as long as they had a MIDI keyboard and a computer).

With the power of the Amiga at your control, you have the heart of a potentially powerful music system. A cheap MIDI keyboard can be picked up for under



Electronics in music is a way of life these days, but how can you get involved? **Maff Evans** lifts the lid of the music box.

£200, an interface costs less than £30 and there is a MIDI sequencing package on the cover of this very issue. If you're interested in creating music, then read the following pages to find out how you can use your Amiga to become an electronic maestro. We will tell you how to get into both MIDI music and create hot sounds by just using the Amiga - without any expensive add-ons.

If music be the food of love, plug in your amplifier and jack the volume RIGHT up!

WIN!

How would you like to win a MIDI interface and a £50 record token? Get a chance by entering this simple compo. You may notice that our headlines are quotes from songs. So what are they?

- 1 Join the rhythm of machines.
- 2 I need a unit to sample and hold.
- 3 Take a beatbox.

All you have to do is write in and tell us where any one of these quotes comes from. Jot down the name of the song along with the artist and send it in to 'I know more than Paul Gambaccini Comp', Amiga Format, 29 Monmouth Street, Bath BA1 2AP by 21 January 1992.

MIDI TERMINOLOGY

The world of MIDI is littered with jargon. Here is a guide to the various terms used:

AFTERTOUCH

This controls what happens after a note has been struck. Mostly it refers to the effects of pressing harder on a key after it has been hit or using the modulation wheel of a keyboard.

EVENTS

All MIDI information is transmitted as events. These control the playing and releasing of notes, pitch bending and codes to carry out special effects.

MODULATION

This involves sending a stream of events corresponding to the action of a keyboard's modulation wheel. The effect depends on the synthesiser or sampler being used and can control reverb, vibrato and other effects such as mixing between sounds.

CONTROL CHANGE

These messages send information such as pitch bending and aftertouch via MIDI, allowing you to record data corresponding to what you do as you are playing notes.

PRESSURE

This is a specific type of Aftertouch (see explanation), and reads how hard you are pressing on a key after the initial striking of the note.

SONG POSITION

This is a marker telling you whereabouts in a sequence you are. You can usually store lists of positions, called either Song Position Pointers or Cue Points. You can use these to jump straight to a specific part of your composition.

PROGRAM CHANGE

This is a MIDI message that causes your sound source to select a new sound, set by entering a number from 1 to 128, regardless of the numbering system used on your sound source.

PITCH BEND

This is when a note is shifted up or down in pitch as it plays. You can adjust pitch-bending via a control on a synthesiser, but some sequencers allow you to directly edit pitch-bend.

NOTE ON/OFF

In order to play a note from a sequencer, two events must be used. A NOTE ON event start a note playing at a particular pitch. This is followed by a NOTE OFF message, which stops the note from playing.

SMPTE

This actually stands for Society of Motion Picture and Television Engineers and is a 'timecode' used for keeping sequencers and tape recorders playing in time.

REAL TIME

Recording onto a sequencer in real time simply involves hitting the Record option and playing the notes live. The sequencer then records the notes in the same way as a tape recorder, but stores them as data.

STEP TIME

Recording onto a sequencer in step time involves entering notes one by one, rather than playing 'live'.

MIDI IN/OUT/THRU

To pass MIDI information from one machine to another, three types of MIDI socket are used. MIDI IN receives data, MIDI OUT sends data and the MIDI THRU port echoes the data arriving at the IN socket, so that you can chain machines together.

VELOCITY

Depending your keyboard's specifications, MIDI can tell how hard a note has been played. This sends a value from 1 (soft) to 127 (hard) and controls the way that a sound is played.

PROGRAM OVERVIEW

This is a fairly simple sequencing package. All the functions you need to begin using MIDI are included, with all the editing and recording options available from a tape-recorder style control panel and a series of easy-to-use pull-down menus, allowing you to start creating tunes straight away with relative ease.

Those of you without MIDI equipment needn't worry, since you can also use Amiga samples to play your tunes. A selection of samples has been included on the disk to allow you to start creating Amiga-based music straight away.

GETTING STARTED

Because we try to cram as much as possible on to our Coverdisks, you can't just boot up *Sequencer One* as you would on the commercial version. For full instructions on loading the program read the Coverdisk pages inside *Amiga Format*.

Once the program has been booted up, the first thing you see is the Memory Allocation window. This is where you reserve memory for storing the notes recorded on the sequencer. To adjust the amount of memory reserved, drag the slider with the left-mouse button until the required value is displayed. You can reserve memory in either Fast RAM or Chip RAM. Fast RAM refers to any memory expansions that are fitted, while Chip RAM refers to the Amiga's on-board memory. Note that if you are using Amiga samples, they have to be stored in Chip RAM, so make allowances for this when reserving memory.

To load the main program, hit OK on the panel.

SEQUENC

As you may have noticed, the full version of this beginners' sequencing package is featured on the cover of this issue. On these pages we outline all the program's functions. Read on to enter the world of MIDI music.

Song Pointers

All editing functions on *Sequencer One* are carried out at the current Song Position. You can move the pointer in a number of ways:

Using the Fast Forward and Rewind controls you can move the pointer backwards and forwards. Double clicking moves to the start or end of the song, or to the start or end of the marked block if Loop mode is on. You can jump to any particular position by typing a new value into the Song Position Window.

On the right of the Track List is a set of cue points which you can set as labels to mark particular sections. You can jump to one of these positions by double clicking on a value and then clicking on the destination position (see Track List Screen for more info).

Recording

To record MIDI information, just select a track to record on the Track List Screen and hit the Record button. Now just play notes in time with the metronome

(see Options for more info on the metronome).

When you record in Normal mode, any new notes recorded will delete what is already on a track. With Overdub selected, the new notes will be merged with the notes on the track. Notes are only destroyed when recording in Normal mode if you actually hit a key to enter a note, otherwise the sequence is left intact.

Loop and Limit Modes

When Limit mode is selected, the sequencer options (such as transposing, editing and quantizing) are only carried out on events within the Block start and End position markers. This allows you to change a section of the song without affecting the rest of the data.

Loop works in conjunction with Limit mode, restricting playing and recording to the specified block. The block plays in a loop, allowing you to keep recording until you're happy. You can overlay notes using Overdub mode, otherwise previous notes are erased.

Step Time Entry Mode



To enter notes in Step Time, click on the 'Keyb' icon to call up this panel. The main part of the panel is taken up by a graphic keyboard. To the right of this are windows displaying the step size between notes, their length and their velocity. By clicking on the bar just to the left of these, you can call up a panel to adjust the type of notes to be entered.



The top row of boxes represent the step size. Simply click on the required type to select it. Below this are three buttons. These specify whether to use normal notes, dotted notes (1.5 times normal) or

THE MAIN SCREEN

The main *Sequencer One* page is where many of the program's operations are carried out, including recording, playing and organising the individual tracks.



MENU BAR

Most of the editing and display options are accessed by way of pull-down menus.

MAIN DISPLAY

This can be taken up by one of three screens: The Track List screen, the Step Edit screen or the Bar Edit screen.

CONTROL PANEL

This contains the tape transport controls and a real-time window which displays a series of 'level meters' corresponding to what's happening on each track.

WALK WITH ME

Getting to grips with a MIDI system such as *Sequencer One* may be a little overwhelming, even if it is aimed at the beginner to sequencing. Never mind, here is a brief walk through to help you get the hang of things. This short tutorial has been designed to both guide you around some of the more frequently used sequencing options and to help you use the instructions to their best capacity. The ten steps show you how to put together a simple song, but you will need to look up how to use some of the options (such as operating the step-time entry keyboard). I hope this will get you into the feel of using the functions and into the habit of referring to the instructions. Well, on with the guide... and good sequencing to you!

ER ONE



THE TRACK LIST SCREEN

This is the main control page for Sequencer One, and is the screen that appears when you first load the program. The screen is divided into two lists, each with a slider to move the list up and down.



Track List

The left-hand side of the screen contains the actual track information. The first column contains the track number, with a red circle to show the currently selected track. To select a track, just click in the gap next to its number.

Next is the track status. A black arrow shows that a track contains sequence data and is active (it will be heard when you play the song). If the arrow is empty, it means that the track either contains no data or is muted (silent when you play the song). The next column displays the MIDI channel, followed by a 15 character name for the track. To enter a name or value, just click on the right place and type, then hit Return.

To the right of the track is the patch number. This can be used to specify a sound from the Sample Palette or a sound on your MIDI device (see the File section for more on the Sample Palette).

Cue List

The right-hand side of the screen is taken up by the Cue List. Here you can store a selection of Song Positions and call them up to jump to a particular location. You can either type in a position value, or copy one from one of the three position windows on the Transport Panel. To do this, double click on the required window to pick up the position, then click on an empty line in the Cue List to store it. You can then click on the line next to it and type in a name for the position. To recall a position from the list, just carry out the process in reverse.

Using Amiga Samples

To use Amiga samples in your song, you need to set up the track to play them. Firstly, enter the sample's number in the palette (see File section) to specify the sound to be used. Next you need to tell the sequencer on which channel to play the sound. To do this enter one of these values in the Channel column:

- L - Play on left channel.
- R - Play on right channel.
- LR - Play on left channel if free, but play on right channel if left is occupied.
- RL - Play on right channel if free, but play on left channel if right is occupied.

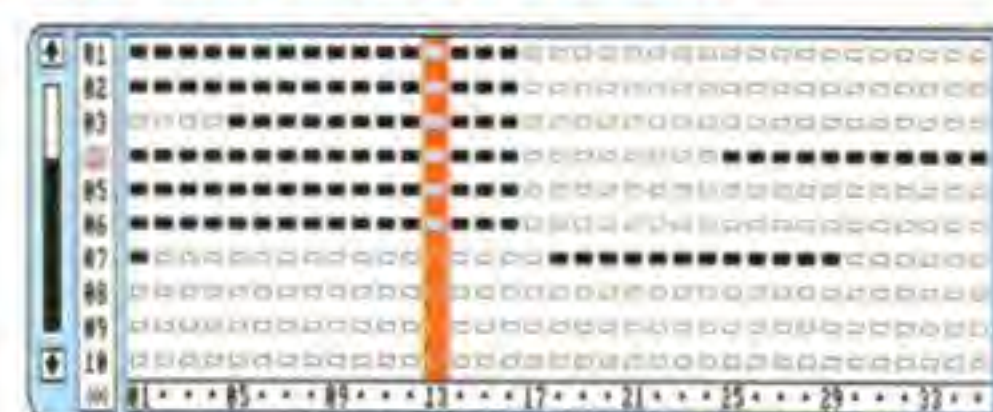
triplets (multiplied by two thirds). The 'Gate Length' is the time between the note on and note off message (set as a percentage of the step size) and the velocity is how hard it is played. To enter a new value just click on the field and type it in. When you have finished, hit OK.

To enter a note, either press a note on your MIDI keyboard or click on the corresponding note on the keyboard on screen. The note will be entered and the editor will advance one step. If you want to enter a chord, hold down Shift and click on the required notes on screen, or hold down the notes on your keyboard.

To insert a rest in your sequence, simply hit the Space-bar. To delete the last note entered, hit Backspace (to the left of the Del key).

The Space-bar and Backspace key can also be used to edit tied notes. By holding down Space and entering a note it will be entered at twice the current Step Size. If you enter a tied note by mistake, holding the note and pressing Backspace will shorten it.

THE BAR EDITOR SCREEN



This screen is used for arranging the bars of your song into the correct order. The screen displays a 35 bar section of ten tracks, with solid rectangles to denote bars containing MIDI data. A bar indicator at the bottom of the screen shows your current position in the song, while the number of hundreds of bars is displayed under the track numbers to the left. You can use the slider on the left of the screen to move down the track list and view the other tracks in memory.

A vertical bar shows the current song position. As the song position advances, the screen scrolls so that you see an equal number of bars before and after the current position (except for at the beginning of the song, in which case the marker moves to the left of the screen). The marker can be moved in three ways: by using the Tape Transport controls, by clicking on the bar indicator at the bottom of the window (as on the Step Edit Screen) or by double clicking at the required position (this also sets the selected track as the current record track).

The Bar Editor Screen is ideal for carrying out



1 Load up the program and move the events allocation slider to about halfway along. If you have a memory expansion, then simply click on the CHIP button so that FAST appears and move the slider all the way to the right. This will leave the Chip RAM clear for storing the samples.



2 Select Sample Palette from the File menu. Click on Rim_Shot and click on Delete to remove it. Now select Load and click on the Samples directory. Load Acoustic_Bass into position one, Slap_Bass into position two, Bass_Drum into position three and Snare_Drum into position four. When finished, click on Exit.

THE STEP EDITOR SCREEN

This screen is used for editing notes on a track, or entering new notes in Step Time.

Zoom



The positions of the grid lines on screen are fixed. By clicking on the boxes in the Zoom window, you can alter the space between the lines, so that more detail is displayed, in effect 'zooming in' on a section.

Note Information

To edit a single note, click on this icon then click on the required note. A window will appear containing information on the note. You can change any of these values by clicking on the required field and typing in a new value. When you've finished, hit the OK button and the note will change accordingly.

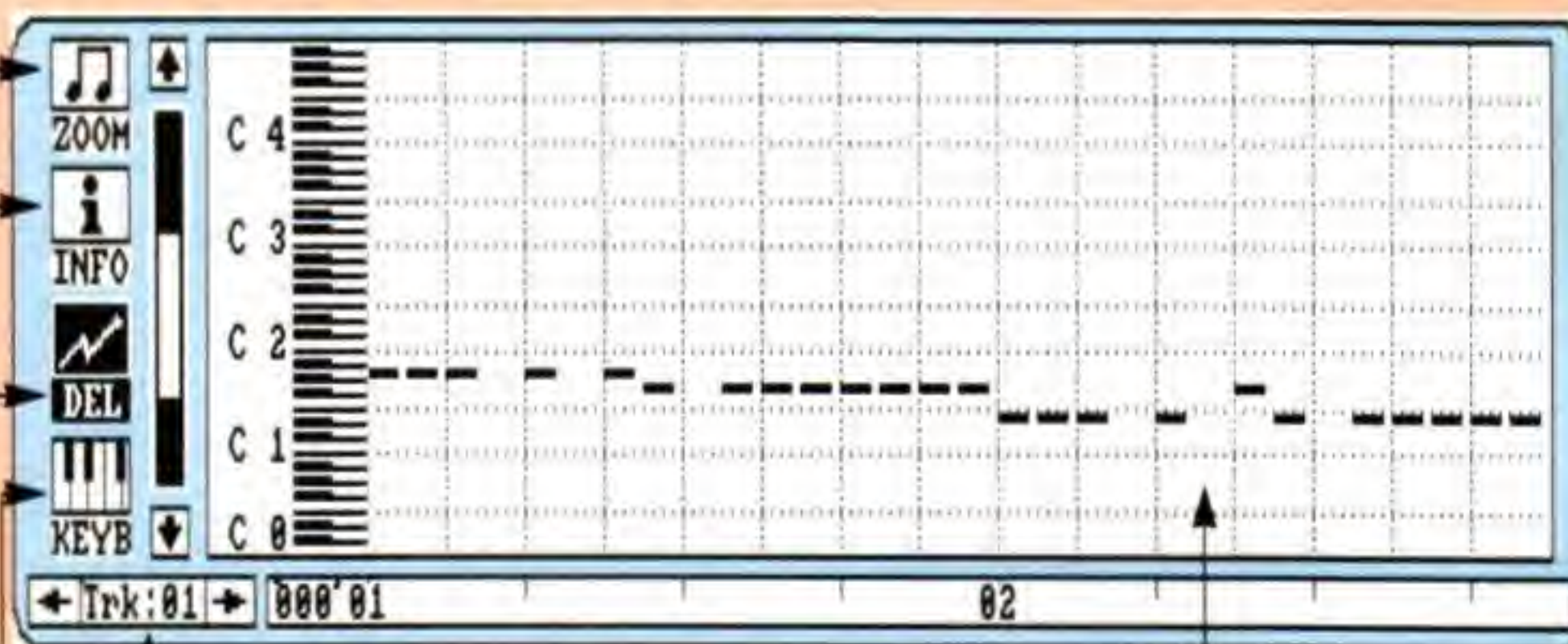
Delete Notes

If you want to wipe notes from the grid, select this icon. You can then 'rub out' notes by picking them off using the mouse.

Defining Blocks

Many editing processes are carried out by using 'blocks'. To define a block, you can type in the start and end values on the Transport panel (as mentioned earlier) or highlight an area using the mouse. To do this, click on the start position with the left mouse button, drag the mouse right to highlight the area and finally click the mouse button again to mark the end point. Limit mode will now be selected and the new block start and end positions will appear on the Transport panel. If you want to cancel the operation in mid-flow, just hit the right mouse button and the pointers will remain unchanged.

To find out about the various Block operations, see the Block section.



Keyboard

Clicking on this icon brings up the Step Time Entry panel. Here you can enter notes individually, rather than playing a part in Real Time.

Track Number

This shows the current track that you are working on. You can change the track number using the arrows on either side. Double clicking on this box brings up the Track Info window (see the Track section).

Grid Display

This is the main edit area, where the notes on the track are displayed and edited. The keyboard down the left of the display shows the current note range and can be moved up or down using the slider. The notes are displayed as horizontal bars next to the note they represent.

The length of each note is portrayed by the length of its bar, the time of the song advancing from left to right with a display in bars at the bottom of the screen. At the right of the bar display, the number of hundreds of bars is shown. To move through the song, use the tape transport controls or click on the bar.

Block operations (see the previous section to find out how to define a block). These can be carried out in two modes. When Select All in the Block menu is turned on, highlighting a block will act on all tracks in a sequence, otherwise only the currently selected track will be affected (see the Block section for more info).

THE MENU FUNCTIONS

To carry out most of the editing and set-up functions, you must access the seven menus at the top of the screen. Menus are accessed as usual on the Amiga, by holding down the right mouse button. Here is a breakdown of the menus and their options.

INFO

This menu option simply gives information on the sequencer's memory settings.

Sequencer Info

This shows the amount of memory used and the number of events free. A horizontal bar gives you a graphical representation of the percentage occupied by your sequence data.

Allocate Events

This calls up the window that appears when you first load *Sequencer One*, which is used to reserve memory for MIDI events (see Getting Started for more info).

FILE

This is where the disk-filing operations are found.

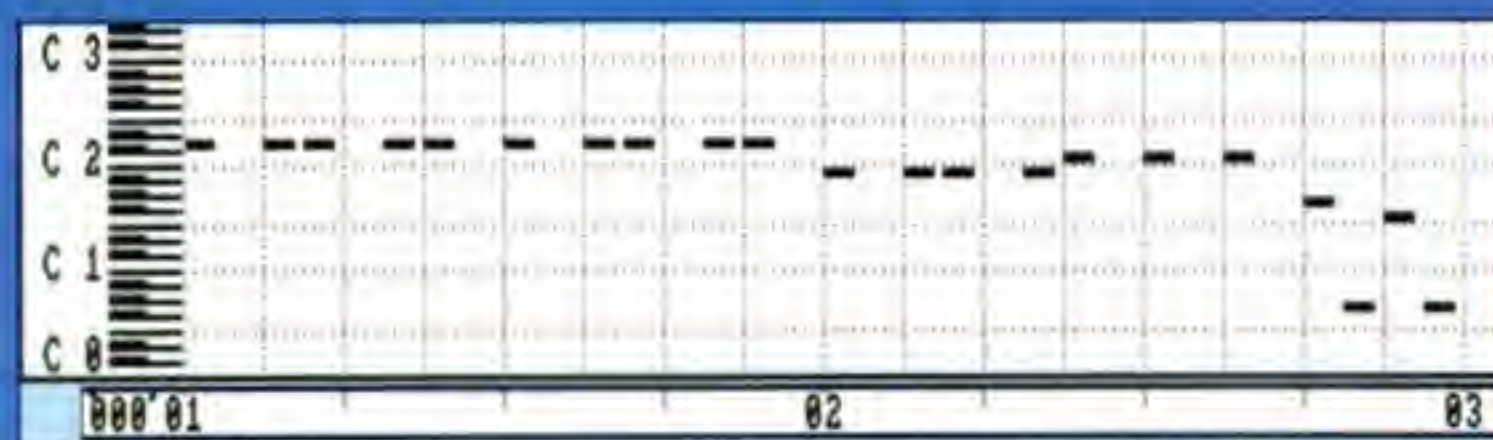
New Song

This wipes all data from the sequencer, giving you a clean slate on which to work.



Load Song

This calls up a file requester to load a song into memory. Clicking on 'Volumes' brings up a list of the disk names available. To select a disk, click on its name and the directory will load (to load from a different disk to the boot disk, put it in the drive then click on



3 Select track one on the Track screen and select Step Editor in the Screens menu. Click on the Zoom icon and select the box on the right. Click on the Keyb icon, then on the box to the right of the keyboard. Select the second box from the right and enter the notes shown above. Click on Keyb to exit.



4 Go back to the Track List screen and click on the first column after the black arrow on track one. Enter L to set the output channel, then click on the second column and enter the name 'Acoustic Bass'. Click on the third column and enter 1 to set the 'patch' (the sound) that the track will use to number one in the Sample Palette.

'Volumes'). Sub-directories are printed in red and clicking on them brings up a list of their contents (to get back to the previous directory, simply click on 'Parent').

You can also enter directories and file names manually by clicking on the relevant text window, typing them in and pressing Return. When you've selected the required file, click on OK to load it or Cancel to exit the requester.

Save Song

This works in the same way as the Load Song option. When saving a song, the program will add '.ONE' on the end of the file (so that it knows that it is a song file) and save the sequence data along with the current sequence configuration (see Options for more on the configuration).

Import MIDI

This allows you to load sequence data in Standard MIDI File Format (these are marked with the suffix '.MID'). The data can be in either of two formats:

Format 0 songs compress all data into one track. However, when *Sequencer One* loads from this format, the data will be split into separate tracks corresponding to different MIDI channels.

Format 1 songs contain data on a number of tracks and are loaded in the same way as format 0 songs. If there is not enough memory to load a format 1 file, the program will try to keep as many tracks as possible.

Export MIDI

This is used to save data in Standard MIDI File Format. You will be asked whether you want to save in format 0 or 1, so you should use the option best suited to the setup into which you will be loading the song.



Sample Palette

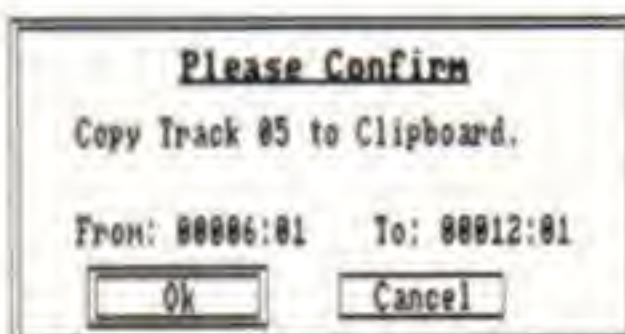
This is where Amiga samples are loaded to use in your song. To load a sample, click on Load and select the name of the sound you want. When this is

done, you will be given a list of numbers (which refer to MIDI patches 0-128). Simply click on the list to place a sample in that position. To delete a sample, click on its name and then hit delete.

The sample list will be saved with your song, but the samples won't. To save swapping disks, it's a good idea to copy any samples you use on to the disk with your song.

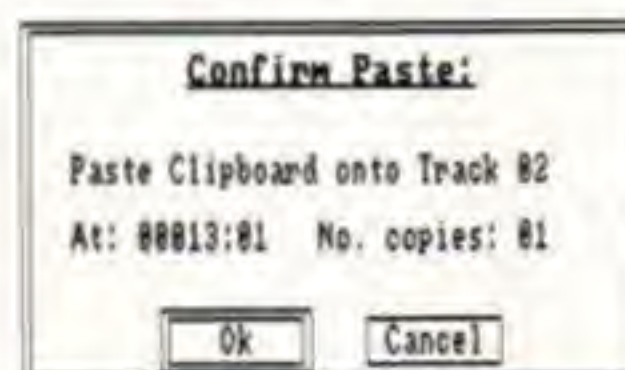
BLOCK

This contains the commands for moving blocks of data around within the song. All the operations are carried out on the currently selected block (see the in the Step Edit section to find out how to mark a block).



will actually delete the events it transfers from the song, while Copy simply duplicates the marked block. Both operations take data from between the start position specified and the beat before the marked end position. If Select All is on, data from all tracks will be used, otherwise only data from the currently selected track is used.

When you carry out either of these functions, a window will appear displaying the information which is to be cut or copied. Hit OK to confirm it or Cancel if you change your mind.



appear telling you where the data will be placed, along with how many copies are to be pasted in. You can change this value by clicking on the field and typing in the required number.

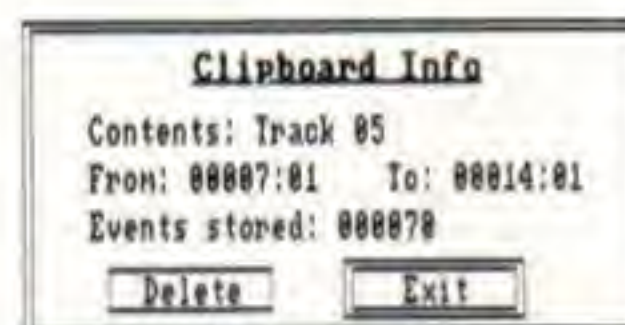
If Overdub mode is switched on, the inserted data will be merged with the events already there, otherwise the old data will be replaced by the Clipboard data. After pasting data into a song, the Song Position pointer moves to the next beat after the pasted data.

Delete

This works in a similar way to the Cut and Copy functions (and displays a similar window) except that data is not placed in the Clipboard.

Select All

If this is switched on (marked by a tick) all block operations apply to all tracks, otherwise only the currently selected track is affected.



Cut/Copy

These sections are used for transferring events into the Clipboard. Cut

Paste

The Paste function inserts the data in the Clipboard into your song. A window will

Block Info

This shows the data currently stored in the Clipboard, which is the data to be



used in subsequent Paste operations. The window displays information referring to where the data was taken from and the number of events stored. If you want to clear the Clipboard, click on Delete, otherwise hit Exit.

Load/Save Block

Using these options, you can load block data into the Clipboard or dump data from the Clipboard to disk. This is useful for saving favourite riffs or drum patterns to use later on.

TRACK

Track Operations are also referred to as 'Global' Operations, since they refer to all the events on a particular track. These options all correspond to the currently selected track, and can be restricted to work only on the current block using Limit mode.

Track Info

This brings up information on the current record track and can also be accessed by double clicking on a track in the Track List Screen or by clicking on the track name on the Step Edit Screen.

The window displays all the information referring to the current track, including the number of events, the number of note on and off messages and the presence of MIDI control messages. If any Pressure, Control Change, Program Change or Pitch Bend information is found, then the relevant message will appear solid, otherwise it will be shown in italics.

Additional information in the window, such as the track name, the MIDI channel, the patch number and the volume and pan settings is also shown and can be changed by clicking on the required field and entering a new value. To transmit the data, click on OK, otherwise hit Cancel.

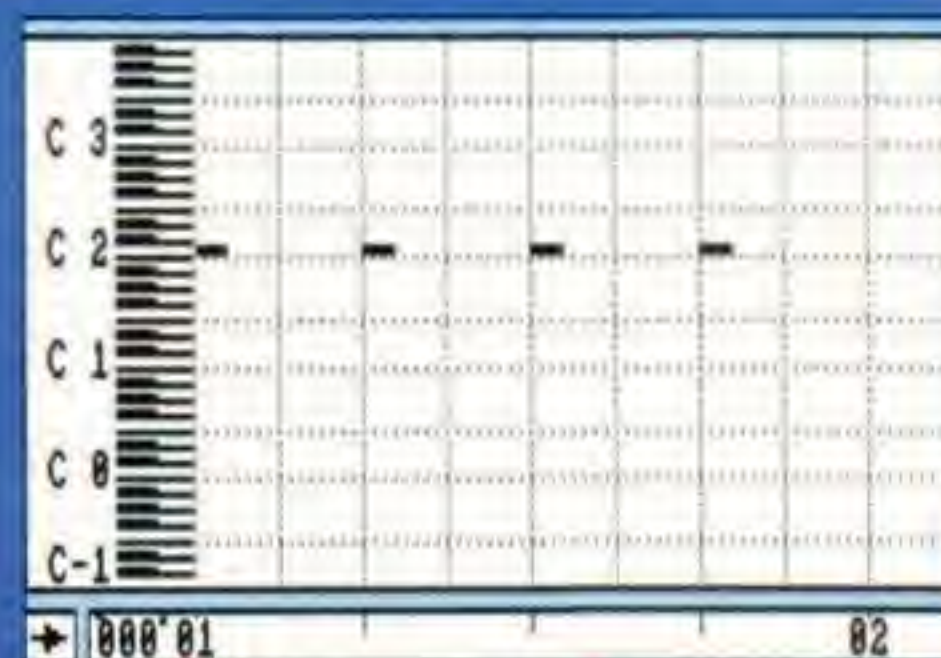
Quantize

This allows you to correct the timing of notes on a track (or in a block if Limit mode is on). You can set the resolution of the correction either by clicking on one of the seven note types (1/4, 1/8, 1/16 and so on) at the top of the window, or by entering a clock value and clicking on the '?' icon. You can correct down to 1/192 of a note by entering 001 next to clock ticks.

Quantization works by moving the note on messages to the nearest 'quantization interval' (set by clicking on the required resolution box). You can keep the current note lengths by clicking on the box next to 'Keep Note Length' (which will move the note off messages by the same correction), or only move the starts of the notes by selecting 'Keep Note Off time'.



5 Select track two on the Track screen and go to the Step Editor. Rewind to the start of the song, then click on the Keyb icon and enter the notes shown above. When you've done that, click on Keyb to exit and go back to the Track screen. Enter track two's channel as L, its name as 'Slap Bass' and patch as 2.



6 Select track three on the Track List screen and go to the Step Editor. Click on Keyb and enter a C2 note on each beat of the first bar (this should be every four steps) so that it looks like the grid shown on the left. Go back to the Track screen and set track three's output channel to R, its name to 'Bass Drum' and its patch number to 3.

THE TRANSPORT PANEL

This panel appears at the bottom of all the screens. From here you control the recording and playing of your sequence, the current song position, the block markers and the recording mode.

SONG POSITION

This window displays the current position within a song in bars and beats. As well as moving around the song with the Fast Forward and Rewind controls, you can type in values to jump to a specific point.

SONG TIME

This shows the total time that has elapsed since the start of the song.

TEMPO

This displays the speed of the song in beats per minute. To change the speed, simply click on the window and type in a new value.

LIMIT BUTTON

This forces the sequencer to only carry out operations on the currently selected block.

BLOCK START AND END POSITIONS

These show the start and end points of the selected block. You can change these by typing new values into the windows.

TRANSPORT CONTROLS

These work in a similar way to normal tape controls. Play starts playing a song, Stop stops it and Record allows you to record notes on the current track, while Fast Forward and Rewind move the current song pointer.



OVERDUB BUTTON

When Overdub mode is selected, recording MIDI information results in the newly entered notes being merged with the notes already on a track. With Overdub mode turned off, recording new notes deletes the notes on the current track.

AUTO REWIND

When selected, this rewinds to the beginning of the song when you hit Stop. If Limit mode is selected, the song will rewind to the start of the currently marked block.

ACTIVITY LEVELS

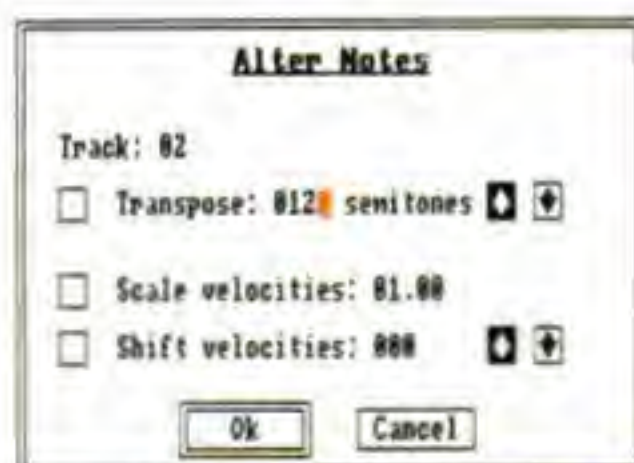
When playing a track, these levels show whether anything is happening on a channel. The first 16 bars depict MIDI channels, while the four on the right display activity on the Amiga's sound channels.

LOOP BUTTON

Clicking on this allows you to record in a loop until you get a section right.

Tidy Block

This moves note on and note off messages so that there are no notes left 'hanging' at the end of a block. If a note is mostly inside the block it will pull the note off message inside the block, but if the note is mostly outside it will move the note on forward so that it is no longer contained in the block.



Alter Notes

This option allows you to transpose notes (move their key) up or down or change their velocity data. The option

works throughout the current track or on the current block if Limit mode is selected.

To transpose notes, click on the box next to 'Transpose', enter the number of semitones you want them to move and select the up or down arrow to specify whether they are to move up or down in pitch.

You can change the velocity of notes in two ways:

you can 'scale' (multiply) them or simply shift them by a constant amount. Scaling them by 1.00 leaves them as they were, whereas entering a value between 0.00 and 1.00 reduces their velocity and entering a value greater than 1.00 increases them. Shifting velocities adds (up arrow) or subtracts (down arrow) a number from the current setting, but make sure that the values stay between 0 and 127.

If both Scale and Shift options are selected, the Scale function is carried out before the Shift function. You can use this to 'flatten' velocities by scaling them by 0.00 and entering the required overall velocity level on the Shift option.



Alter Times

This option can only be carried out on an entire track (in other words Limit mode is ignored). You can either shift

the timings forward or backward by a specified number

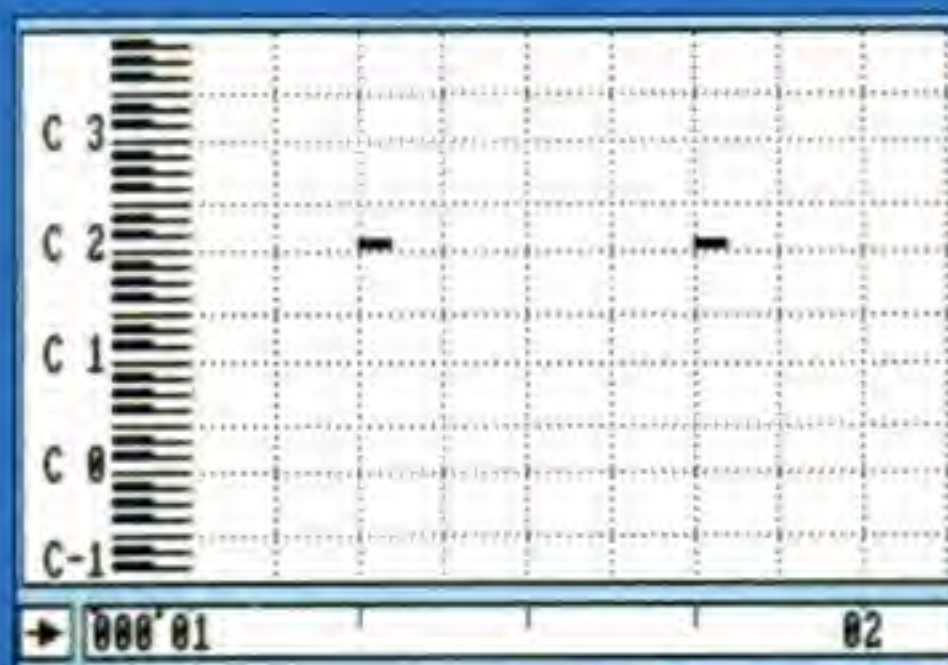
of ticks (one tick is equal to 1/192 of a note), which is useful if you are using a sound with a slow attack. To do this, click on the box next to 'Shift Times' and enter the required number of ticks and the shift direction. Alternatively, you can compress and expand note timings by multiplying them by a constant using the 'Scale Times' function. For example, scaling by 0.5 will compress two bars into one, while scaling by 2.0 will expand one bar to two. If both functions are active, the Scale function is carried out first.



Alter Cont

This function works in a pretty similar way to the velocity option in the Alter Notes window, except that you can change continuous

MIDI control data, such as Channel and Poly Aftertouch and Pitch Bending. You can also specify a controller by entering the relevant controller number (check your synth's manual for the required codes).



7 Select track four on the Track List screen, then go to the Step Editor and click on Keyb. The snare drum line is very simple, so just enter a C2 note on beats two and four of the first bar, then click on Keyb again to exit. Go back to the Track List screen and set track three's channel to R, its name to 'Snare Drum' and its patch to 4.



8 Select Bar Editor from the Screens menu and mark from position 1:01 to 3:01 on track one. Select Copy from the Block menu and click on OK. Fast forward to position 3:01 and select Paste from the Block menu. Enter the number of copies as three, then hit OK.



Strip/Thin

This is used to remove MIDI messages from a track (or block if Limit mode is on). To specify what kind of data is to be removed, click on the box

next to its name. You can set two ranges for this operation, the values representing different information depending on the type of data involved. If both First Range and Second Range are selected, only events falling inside both ranges will be affected.

Once you have set the type of data to be removed and the range that you want to affect, click on the Strip or Thin option to activate the option. Strip mode removes all specified data, while Thin only removes every other occurrence (which is useful for removing superfluous MIDI control messages).

Undo Track ??

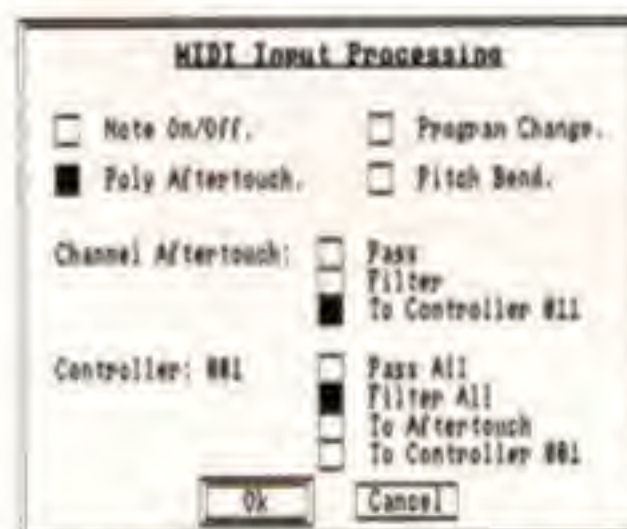
This enables you to cancel the last operation carried out, as long as the Undo option is enabled in the Options menu. Undo can be toggled, in other words you can undo an Undo!

MIDI

This sets up the MIDI options the sequencer will use.

Soft Thru

When this option is enabled, it causes the MIDI Out port on your interface to act like a MIDI Thru port. In other words, any data received at the MIDI In socket will be sent from the MIDI Out. The channel over which this data will be sent is specified by the current record channel.



Set Filter

By clicking on the required boxes, you can cause any MIDI messages received to be ignored or re-transmitted as different types of

message via the MIDI Thru socket (or MIDI Out if Soft Thru is selected).

Sync Send

This allows the sequencer to send signals via MIDI to synchronise other devices (such as a drum machine). When Sync Send and Internal Sync (see below) are both selected, the program sends these messages:

MIDI Clock – When playing or recording, a clock signal is sent every eight ticks (24 clicks per quarter note).

Start – This message is sent every time you start the sequencer playing or recording.

Continue – This is sent when you start playing or recording from a position other than the song's start.

Stop – Is sent when you stop the sequencer.

Song Position Pointers – These are transmitted when the song position is altered by a means other than playing or recording.

Internal Sync

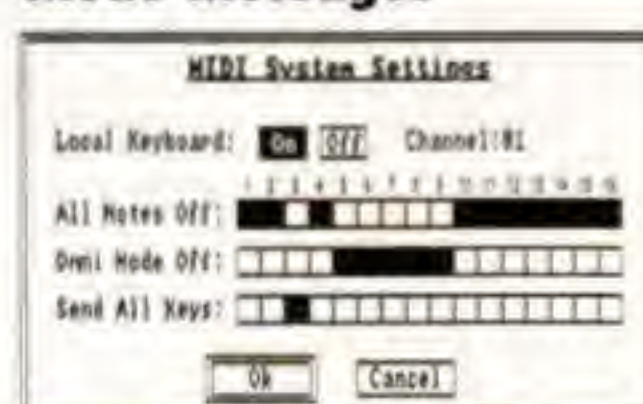
This option tells the sequencer to use its own internal clock for synchronisation.

External Sync

If this is selected, you can synchronise the sequencer to an external source (another sequencer, a drum machine or a SMPTE to MIDI unit). With this selected, you can put the sequencer into standby mode by pressing record or play. The program will then respond to start, stop and song position information received via MIDI.

There are a few things to note if this is selected. You can't change the tempo of the sequencer, all the information is passed to the MIDI Out socket (regardless of Soft Thru) and Auto Rewind will not work.

Mode Messages



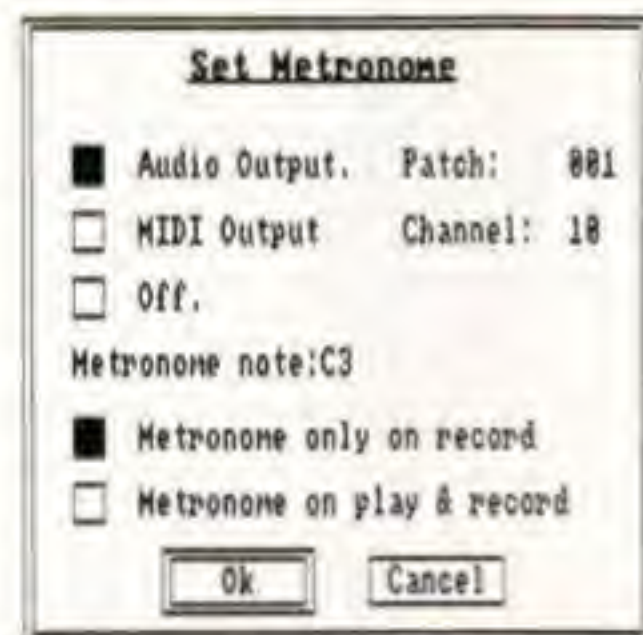
This specifies the messages to send when Stop is pressed. The type of message to send depends on the type of equipment you

are using (refer to the manual to see what is best for your machine).

On this screen, you can also set the Local Keyboard mode for your synthesiser. With Local on, the synth will play internal sounds as well as sending MIDI data. With Local off, it will only send MIDI data.

OPTIONS

These set the general options that the program will use.



Set Metronome

This gives you an audible beat to work to when recording notes in Real Time. Here you can select whether to have an audio output (via the



monitor) or to send a MIDI message on a specified note on a set channel. If you don't need a metronome, you can also turn it off.

Set Time Sig

Using this window you can set the time signature of a piece. You can type in the number of beats per bar (2 to 16) and set the beat size to quarter or eighth notes.

Click Tempo

This allows you to set the tempo by clicking the mouse button. A window will tell you how many times you need to click the button, so do this at the required tempo to set it. A second box will tell you what the resultant tempo is. Once you are happy, click on OK to use the new tempo.

Overdub Mode

When this is selected, any notes recorded or passed on to a track will be merged with the data already there, otherwise, all previous data will be erased. This can also be set on the Transport panel.

Auto Rewind

When selected, this forces the sequencer to rewind either to the beginning of the song or the current block start marker (if Limit mode is on).

Enable Undo

This toggles the Undo function. Turning off Undo can save memory and speed-up some editing operations.

Song Notes

This is a simple notepad for you to store notes on the song, along with the song title and file name.

Keyboard Help

This calls up a set of keyboard short cuts that you can use. If you hate using a mouse, then study this!

Load/Save Setup

A sequencer set-up consists of a number of options which govern the editing options of a song. This includes: the quantize resolution and type; the MIDI Filter settings; the sync settings; the MIDI mode messages; the time signature; the metronome settings; the tempo; the Overdub, Auto Rewind, Enable Undo, Soft Thru and Select All modes; the Step Entry mode, gate and velocity; and the Zoom interval. You can save this setup so that the program returns to this state every time it is loaded by saving over the default setup file, named SEQ_ONE.CFG.



9 Mark from position 1:01 to position 3:01 on track two, then instead of Copy, select Cut from the Block menu. Hit OK, then move the song position on to 9:01. Select Paste and enter the number of copies as nine. Now click on OK to carry out the paste.



10 Mark from position 1:01 to 2:01 on track three and Copy it. Move the song position to 2:01 and paste in 23 copies. Mark from 1:01 to 2:01 on track four and select Cut. Move to position 5:01 and paste 20 copies. Now rewind, hit play and listen to your song!

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GO GAJITS GO

Once you've got the swing of things with Sequencer One, where can you go next? Here are a few suggestions on how to expand your sequencing system.



SEQUENCER ONE PLUS



So you think you've mastered all the options of *Sequencer One*, eh? Want some more functions and operations to play with, do you? Well maybe *Sequencer One Plus* will interest you.

The new version features the same friendly operating-and-editing system as the version featured on the Coverdisk, but with a few important additions. The new 'Diamond Drag' system allows you to carry out rapid editing using the mouse. You can drag notes around the grid, transpose them, stretch them, shrink them or delete them in a totally visual, interactive manner. The 'Juke Box' screen allows you to chain songs together by loading in a new song as the previous performance plays. This is ideal for live work or simply showing off your latest creations to friends!

Add tempo maps, auto count-in, MIDI system Exclusive data handling, improved quantising and advanced Amiga sample playback, and you've got a much more powerful system to play around with. The full package costs £129.95, but you can upgrade from your Coverdisk version for just £39.95 via our mail order section in *Amiga Format*.

THE SAMPLE SERIES



The fact that *Sequencer One* makes use of Amiga IFF samples assumes one important thing - that you have a sampler to actually record sounds. If you have a sampling system, then you'll have no trouble getting hold of new sounds, but if you're a sampler short of a studio the lack of sounds could cause problems. After all, you don't want every single song you write to use the same instruments, do you? So you don't possess your own sampling hardware and software, but what can you do to remedy this situation? Well don't get your amplifiers in a twist - Gajits have come up with a solution. Those helpful and considerate people have put together a series of IFF samples available on a set of five disks containing sounds ready to use in your own sequences:

1. Percussion and Effects
2. Guitars and Strings
3. Brass and Woodwind
4. Synths and Vocals
5. Pianos and Keyboards

By ordering through *Amiga Format* mail order, you can either buy the disks individually for £9.95 each, or get hold of the entire set for £39.95 - almost a tenner cheaper than buying them separately and nearly £25 less than the usual retail price.

Alternatively, you could spend (at the very least) 30 quid on an Amiga sampling package and another 50 or so on a sample CD to actually have some sounds to record! The choice is yours, but the piggy-bank will need a bit of stocking up for the latter option.

SEQUENCER ONE USER KIT



If you want some additional information on *Sequencer One*, including a full manual and a registration card, then this is what you need. The manual is basically what is featured on the instruction pages in this supplement, but it also contains editing examples and an index for easy reference. The registration card will enable you to obtain free update information from Gajits along with a telephone support service. This is available for the nominal fee of £6.95.

THE SEQUENCER ONE HIT KIT



After using a sequencer for some time, you may find that you tend to use similar drum patterns or riffs in many of your songs. The *Hit Kit* allows you to create drum tracks, bass lines and other accompaniments in a wide range of musical styles, ranging from blues and ballads to house and techno. With very little effort you could be creating songs in whatever style you like, ready to produce that chart hit. This useful tool is available for just £24.95 from *Amiga Format*.

TO FIND OUT HOW TO GET HOLD OF THESE ITEMS, TURN TO PAGE 234 IN AMIGA FORMAT OR CALL NIKKI ON 0458 74011

I NEED A UNIT TO SAM

COMPUTER MUSIC ISN'T just a matter of linking your machine up to MIDI equipment to create songs. You can also produce music just using your Amiga. This opens up a whole world of possibilities, from sound sampling to capture instruments and sound effects, via creating tunes to include on your own demos to a full-blown computer music set-up, including sequencing, recording and editing. Here's a run-down of the various sections of Amiga sound systems.

SAMPLING

The advanced sound processing of the Amiga makes possible something that was only previously available on advanced machines usually found in studios – the world of sound sampling. By connecting a sampling cartridge into your Amiga and loading up the software, you can record sounds from any external source. Lift sounds from records, tapes and CDs, record speech and sound effects from video, or simply use a microphone to take sounds from the real world.

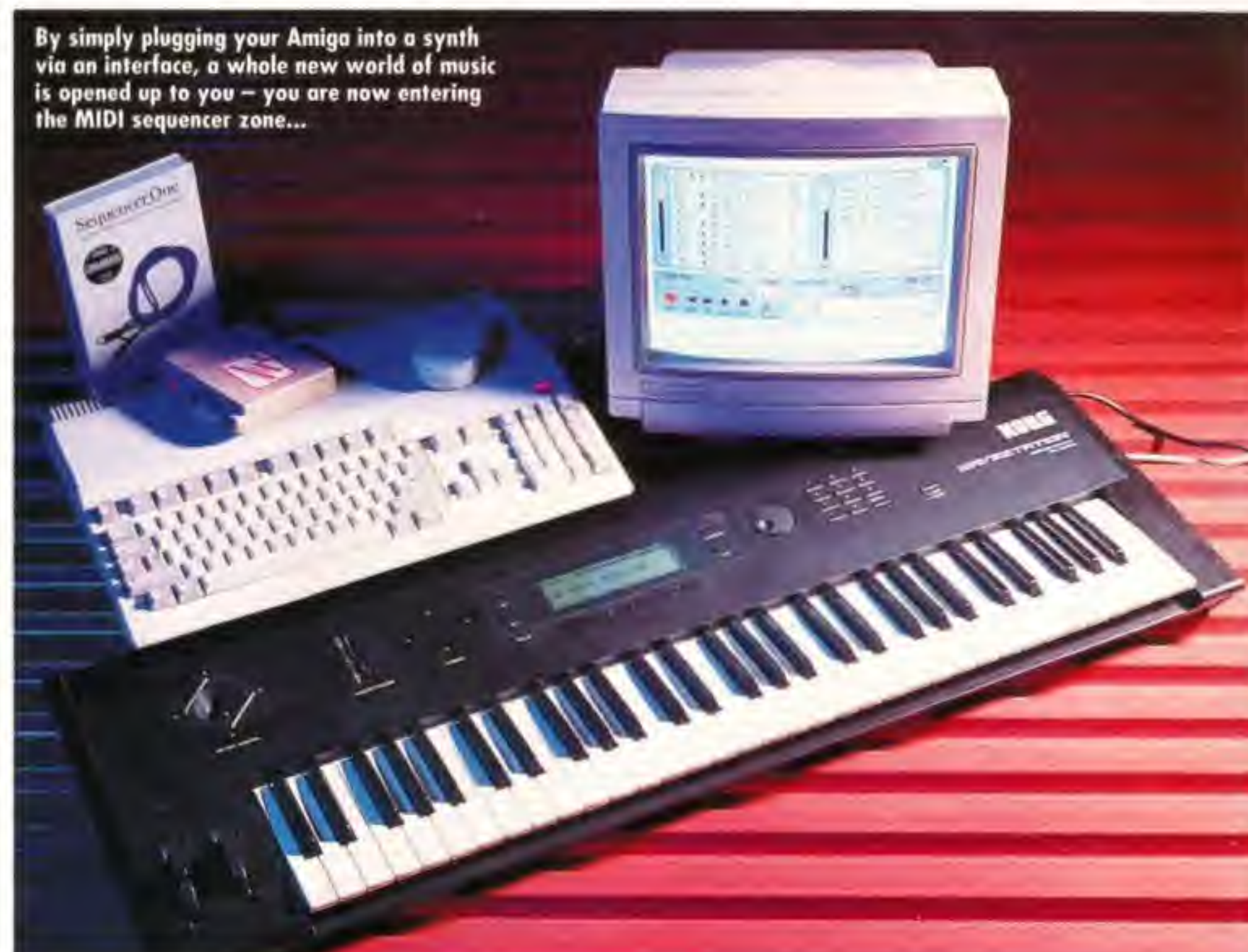
Once you have captured a sound, you can use the software to chop it, loop it, change its pitch and add effects such as echo, delay or even playing in reverse. Sounds can then be saved out to disk ready to use in other programs. The most usual situation that uses samples is in an Amiga-based sequencer, but you can also use samples to add sound effects to games or demos. Just imagine – instead of that weedy ping when your sprite fires its weapon, you could use a machine-gun sample from *Terminator*!

So what equipment do you need to get into sampling? There are a number of packages available and there is bound to be one which fits your requirements, whether you're a beginner, an enthusiast with a tight budget or an advanced Amiga sound technician. Here is a selection of some of the best packages available.

TECHNOSOUND TURBO

This is pretty much an entry-level sampler, giving newcomers to Amiga sound and music to get to grips with the techniques involved. Along with the usual recording and editing functions, the program also contains a wide range of real-time effects, allowing you to add echo, phasing and ring-modulation effects to a live input. Another nice feature is a simple rhythm

If this issue's brief foray into the world of Amiga music has whetted your appetite, then you may want to experiment even further. But what can you do with music using your machine? What packages do you need? Maff Evans peruses the catalogue.



sequencer, which allows you to create patterns from short samples.

The package is fairly simple, with a straightforward approach to all the functions and not too much in the way of confusing extras. If you want to get started in sampling, have a look at the mail-order section in *Amiga Format* (Pages 232-235) to get hold of this entry-level system.

For those who want to get into sampling, *Technosound Turbo* offers a wide range of editing tools in an easy to understand package – just right for the beginner.

MIDI

So you've played with *Sequencer One* until your speakers start to smoke. Where do you go from here? A number of programs are available to allow you to get the most out of MIDI, including more advanced sequencer packages and editor/librarian programs for editing sounds.

Those of you with Roland equipment such as the CM sound modules or the D series of synthesizers may want to expand your *Sequencer One* set-up with a sound editor and patch librarian system. The *CMPanion* system allows you to edit sounds in the CM modules and store them in a database, while *4D Companion* is an editor/librarian which gives you full editing and storage control over D5, D10, D20 and D110 sounds. Both these programs multitask with *Sequencer One*,



KCS offers the electronic musician unrivalled power over music creation. Not only can you record and edit music, you can print out a score, sync it to tape or automatically mix down all the channels.

enabling you to adjust sounds even while you are working on a song.

If you have higher aims and want to go for the real big stuff, then Dr T's latest version of *KCS* is for you. *KCS 3.5* with Level II is a full MIDI sequencing and score-writing package. The system comes with the *KCS* software, Dr T's *Tiger* graphic-editing system, the *Automix* automatic mixdown package and *Quickscore* score writing capability. You are also supplied with software for running in sync with the Fostex R8 tape machine as well as with SMPTE code.

Dr T's also have an editor/librarian which multi-tasks with the *KCS* system. *X-Or* is a patch editor and librarian which can be configured to work with virtually any MIDI system, from synths and tone modules to effects units. All the data manipulated with *X-Or* can be recorded along with *KCS* sequence data for some stunning live sound effects!

AMPLE AND HOLD

SOUND MASTER



AudioMaster III is the software bundled with Aegis' Sound Master package, but for serious sampling power the updated version four offers incredible editing power.

If you already know your sampling onions, but don't yet have an Amiga sampling system, then this may be the one for you. The package consists of an excellent piece of sampling hardware, which features stereo mic and line inputs, an input-level slider, an overload LED and a built-in microphone, with the added bonus of the acclaimed (and rightly so) *AudioMaster III* software. As well as supplying all the usual sampling and editing controls in one of the most straightforward operating systems available, the program features a loop sequencer, which allows you to create 99 loops within a waveform, making it possible to recreate a whole song from a few short sections.

UPDATE SOFTWARE

If you already have a simple sampling system and want to update the software to carry out more advanced operations, then there are a couple of options available.

A still fairly new program is available from Sunrize Industries (the makers of Perfect Sound 3). *Audition 4* contains all the features found on Aegis' classic, but has quite a few additions. You can arrange the screen display in any way you want, calling up windows when needed and tucking them away if you get too muddled. The program also boasts a few additions, such as recording samples directly to disk and a wide range of real-time effects. The best sampling program currently available? Could be. But...

The programmer of the *AudioMaster III* software

When you feel that simply connecting a synth isn't enough, you can expand your system drastically. Using sync and trigger boxes you can also link drums, tape recorders and other units to your Amiga to build a fully self-contained music creation system.



packaged with the Sound Master system has been busy updating and improving his creation to produce (surprisingly enough) *AudioMaster IV*. In addition to the masses of features available on the previous version, *AudioMaster IV* promises such advanced effects as shifting the pitch of a sample while keeping its timing, or carrying out 'time-stretch' operations, which enable you to make a sample longer or shorter while keeping the same pitch. This could put the Amiga in a position to take on some of the dedicated hardware samplers!

UP AND COMING

For those keeping an eye on the sampling scene, you may like to know that a number of new packages are on the horizon.

Microdeal have a couple of tricks up their sleeve. As well as updating their AMAS system, they are also releasing a replacement for their Mastersound package in the form of Stereo Master. This new package includes a host of new options, such as a full real-time effects creation program, a full waveform analyser and a sample sequencer.

SOUND & VISION

THE SHOPPING LIST

TechnoSound Turbo - £27.99

Available from Amiga Format Mail Order.
Hotline 0458 74011

Sound Master - £129.55

AudioMaster III - £59.25

Available from HB Marketing 0753 686000

OctaMED - Free with AF issue 29

For back issues, 0458 74011

Audition 4 - £49.99

KCS 3.5 with Level 2 - £279

X-Or - £219

Available from Zone Distribution 081 766 6564

CMPanion - £99.95

4D Companion - £99.95

Available from Gajits 061-236 2515

TRACKERS



A good place for music beginners to start with Amiga tracker programs is *NoiseTracker*. This program allows you to create Amiga-based four-track tunes using a wide range of sampled sounds.

If you want to create stand-alone tunes on your Amiga, then a tracker program is the thing for you. These allow you to use Amiga samples and internal synth sounds to create tunes which can be played without having to load the creation program, so you can stick them on a disk and distribute them around your mates.

The best option for creating tracker songs is Teijo Kinnunen's *OctaMED*. This program enables you to create eight-track tunes on your Amiga - a clever feat seeing as the Amiga only has four sound channels. As well as a music editor, the program features a synth-sound creation page and a full sample editor, making it one of the most comprehensive Amiga sound programs available. So where can you get this wonderful package? On the cover of the last issue of *Amiga Format*! Check out Back Issues on Page 238 of this issue to get yourself a copy.



OctaMED, featured on last month's *Amiga Format* Coverdisk, is a pretty advanced tracker program, allowing you to edit samples, create synth sounds and program tunes to play on eight tracks.

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WIN A MINI STUDIO

Electronic music fever has gripped us here at *Amiga Format*, and we'd like you to share in the enthusiasm. So what do you need to record potential hit songs? A studio would be nice, but rather expensive! You could do with some recording gear though, so those nice people at Zone Distribution have given us some of the latest sequencing and recording equipment available. Now isn't that just what you need? Yes, of course it is.



HERE'S WHAT YOU COULD WIN:

A FOSTEX X-28 FOUR-TRACK TAPE RECORDER

This highly desirable portastudio features eight inputs, full level mixing, simultaneous recording across all tracks, effects send/returns and monitoring, LED level and transport displays and a whole host of other features, making it one of the best mini-studios available.

A COPY OF DR T'S KCS 3.5 LEVEL II

This *Format* Gold-winning sequencing package is just about the most powerful music-creation system available on the Amiga. Not only can you record and edit MIDI data, but you can print out a musical score, automatically mix-down your track in real time and sync the program to run in time with the multitrack.

A PHANTOM SYNC UNIT

This unit acts both as a MIDI interface and a synchronisation unit, allowing you to link *KCS* up to the multitrack and run the sequencer in time with tracks you've already recorded.

A COPY OF THE X-OR PATCH EDITOR/LIBRARIAN SOFTWARE

No more fiddling around with the buttons on your synth to come up with new sounds! This program allows you to edit sounds on your synthesiser and store them on disk for future use. You can also carry out changes in real time and transfer them across to *KCS* as sequence data, so that an effect changes or a sound is altered automatically as a sequence is playing!



Those Musical Questions in Full

- 1** Who is the jazz musician famous for playing 'Stranger on the Shore' on his clarinet?
- 2** Who wrote the music for 'West Side Story'?
- 3** How many brides did the Seven Brothers have?
- 4** In the Who song, 'Free Me', which character was pleading to be free?
- 5** Who sang 'I Was Born Under a Wandering Star' in the western musical film 'Paint your Wagon'?
- 6** In the same film, who sang 'I Talk to the Trees'?
- 7** Which famous musical star of the 40s and 50s later starred in the TV show *Dallas*?
- 8** Who wrote the song 'Pinball Wizard' and who sang it in the film 'Tommy'?
- 9** Which female singing star wrote, directed and starred in the film drama 'Yentl'?
- 10** Who directed the film of the musical 'A Chorus Line'?

So what do you have to do to win all this wonderful equipment? Well, the festive season is upon us and all those fantastic musical films are appearing on the telly. All you have to do is gather the members of the family together and find the answers to the 10 questions printed in the box above.

Got all those? Right, send them in to

**Food of Love Competition,
Amiga Format,
29 Monmouth Street,
Bath
BA1 2AP**

All entries should reach us no later than January 21. The first set of correct answers out of the bag wins all the gear, and two runners up will each receive a copy of *Dr T's Tiger Cub* graphic music editor software.

Right, everyone join in... 'O-o-o-oak-lahoma where the... (that's enough - Ed!)

BY NOW, HOPEFULLY we've managed to get you interested in the world of electronic music and sequencing. However, you can only go so far with just the Amiga's sound chip. So if you want to make music to compete with the big boys, you're going to have to get into MIDI.

The first thing you'll need to get going is a MIDI interface. Just about the best Amiga interface available is Dattel's MIDIMaster. This unit contains a MIDI In, three MIDI Out and a MIDI Thru socket, all housed in a sturdy box and is supplied with two MIDI leads for the nominal sum of £29.99 (for more information call Dattel on 0782 744324). Now then, you've got your interface. What can you do with it? Well simply read on, dear listener...

SAMPLERS



Akai's S1000 sampler is widely used by producers and musicians, making it the industry standard for professional studio recording.

Even though the Amiga is capable of recording and playing samples, it can hardly compare to dedicated studio samplers! These monstrous beasts give compact-disc quality sound and have incredibly powerful editing functions and a hefty RAM storage. Some of the top musicians create tracks by only accessing sounds on their samplers!

The studio standard sampler these days is pretty much Akai's S1000. This unit is a highly advanced sampling system and is probably outside the range of the home musician (costing around £2,000).

Another sampling system which is highly-acclaimed is Roland's S770. Although this is not as widely found in studios as the S1000 is, this unit also gives the musician excellent sample quality and editing functions and it is winning a hell of a lot of support with serious musicians everywhere.

The top of the range, though, in sampling is without doubt the Synclavier. This beast manages to take up most of a room and it features a high-power sampling and sequencing system. Many studios base their whole sequencing and recording operations around one of these, but you're unlikely to find them in the low-end studios. The reason? Well it's because they cost around £250,000!



Roland continue their adventures in sampling land with their impressive-looking and aurally outstanding S770 sampling module.

TAKE A B

When you've done all you can using Amiga samples in your songs, it may be time to...

SYNTHESISERS

These days, synthesisers are advanced systems with extremely impressive sounds – very different from the cable-entangled suitcase affairs of the 70s!

A good starting place for the MIDI enthusiast is Roland's D10. This is a multi-timbral synth based around Roland's revolutionary Linear Arithmetic synthesis. Its multi-timbral capacity allows you to control a number of sounds simultaneously by assigning them to individual MIDI channels, making it ideal as a sound source to use with your sequencer. D10s can be picked up for around £600, so you needn't break the bank to get one!

Roland recently made a brave move in the synthesiser market by releasing the JD800. This features all the functions and sound quality you would expect from a modern synth, with the added appeal of analogue-style controls. This means that all the JD800's options are accessible via their own button, slider or knob, very much like the old analogue synths of the early 80s. Seasoned keyboard players find this way of working more preferable than wading through pages of sub-menus, bringing back the bygone era of early synths



Roland's JD800 – digital sound with analogue controls.

and making the JD800 a hugely successful keyboard. One of the most acclaimed synthesisers of late is the Korg Wavestation. This uses an advanced sound-creation system known as Advanced Vector synthesis. This allows you to layer sounds to create a range of incredibly rich tones and give them extra feel by fading from one sound to another. Another impressive feature is its Wave Sequencing option. Using this option you can string sound waves together to create an ever-changing 'rhythm'. This is a pretty advanced system and is quite expensive, so be prepared to shell out around £1,000. Maff was so impressed with the Wavestation that he bought one himself!



Korg's Wavestation synthesiser continues to uphold their reputation for releasing high-quality sound equipment.

WORKSTATIONS

Some people don't like the idea of having to link many machines together to create MIDI music. They would prefer it if all sequencing, sound creation and editing could be done on one unit. This is where the MIDI workstation comes in.

These machines consist of a synthesiser, drum module, effects unit and sequencer all in one keyboard, so you can produce an entire track without having to use any other equipment. They can also be linked up to other devices via MIDI, so that you can play the internal sounds from your computer or run other MIDI instruments from the on-board sequencer.

The first successful MIDI workstation was Korg's M1 (which has been recently succeeded by their critically acclaimed 01/W). Machines such as the 01/W and Yamaha's SY99 are pushing the limitations of what you can do with sequencing and sound editing on a single system, providing an ideal pathway into sequencing for the keyboardist. For musicians on the move, Yamaha also have the QY10. This contains a selection



Now you can create music wherever you go with the Yamaha QY10. This Walkman-sized unit contains drum and synth sounds along with a sequencer, so you can try out song ideas while on a long journey!

of sounds along with many of the sequencing and drum functions found on a workstation. The difference is that it's about the size of a Walkman. This means that you can take it out with you and plunk in ideas if they occur while you are out.

EAT BOX

...e to move on to working with MIDI. Here's some hot MIDI equipment.

RECORDING AND EFFECTS



The Tascam Porta 3 offers the beginner an ideal entry into the world of multitrack recording for very little money.

Creating electronic music isn't just a matter of choosing the sounds and creating a song. At some point you will probably need to record it to tape. Machines like the Fostex R8 can be controlled via MIDI, enabling you to run your sequencer in time with a tape. The same effect can be achieved using a SMPTE box, which generates a timecode which can 'lock together' sequencers and tape decks.

If you just record your song on tape straight from the sound sources, the result may sound a little bit dry. This is where the effects units come in. A wide number of effects boxes are available, combining reverb, delay, flange, echo, phase and pitch-shifting effects. These can be essential in adding a dynamic feel to your song.



When you start playing in the big leagues, you need some pretty powerful effects to beef-up your sound. The Zoom 9030 multi-effects processor is regarded as the best unit available in this field.

MIDI CONTROLLERS

For those of you who aren't particularly interested in playing keyboards or using a sequencer, don't worry! There are a number of ways available for controlling MIDI devices.

Guitar players can get hold of a little widget from Roland that can be bolted to your guitar. This is linked to an additional pick-up which can detect what note you are playing and convert it to MIDI information, allowing you to control a synth from your guitar. Drummers can get hold of electronic kits, with pads replacing real drums. These don't actually make a sound, but send MIDI information to sound units, much like a keyboard. Roland were one of the earlier

pioneers in this field, with their Octapad series of drum pads being seen in many a drum set-up.

There are somewhat stranger devices though, such as Yamaha's WX11. This is a 'breath controller' which is played like a saxophone or clarinet, but instead of producing its own sound it sends MIDI data to your synth, sampler or sequencer.

As you can see, the world of MIDI incorporates just about anything that you could possibly imagine when it comes to creating music. If you're interested in getting yourself involved, then start scouring those music shops for bargains and let the combined effort of your imagination and talent take over!



Who says that only keyboard players and drummers can use electronic instruments? There are a number of units available for guitarists to link into electronic music and this WX11 breath controller allows sax players to get in on the act as well.



DRUM MODULES



Yamaha's RY30 features more expressive controls than almost any other drum machine.

In the early days of electronic music, drum machines (such as the Roland TR808) were to be found in virtually every set-up. Over the years rhythm boxes have advanced, with machines like Yamaha's RY30 featuring such accessories as a pitch-bending wheel to change the tone of the drum sounds as you play.

The advent of the MIDI sequencer has meant that, over the years, people have been using drum machines as a sound source for their drum tracks, preferring to create the rhythm on the sequencer rather than on the machine itself. People have picked up on this by releasing Drum Modules, such as the Alesis D4. These contain massive banks of sounds which can be triggered from external sources (such as a drum-kit or MIDI device).



Linking a module such as the Alesis D4 to your MIDI system gives an extremely advanced rhythm set-up.



Roland's update to their famous Octapad has proved extremely popular with drummers wishing to use MIDI.



For those wanting a full-blown drumkit to plug into MIDI, the Casio kit offers a lot of flexibility.

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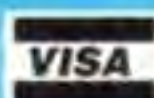
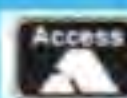
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JUST A SPLASH OF RED ON HERE... YOU'LL SEE WHAT IT IS IN A MINUTE!

Even more than Rolf Harris or Tony Hart, the Amiga makes animation and painting fun and accessible. So boot up your Graphics Workshop disk and let's get to it!



Computer 'art' is a bit of a pretentious idea, sure, but computer painting is a heck of a lot of fun. Over the years, a number of useful and simple ideas have been developed on computer graphics programs to make creating pictures fun and easy.

The first of these is that a computer can easily make perfect shapes for you. Whether it's drawing a circle or constructing a square, it's pretty difficult to do free-hand on a piece of paper: but a computer can do it quickly and accurately.

The second idea is what's called rubber-banding. This makes it easy to do smooth curves of the kind that designers everywhere would have been proud of but a few years ago.

The third is repetition. The third is repetition. You can easily do fourteen copies of something all at the same time when you're doing it on a computer screen. The fourth is that nothing is fixed: you can change a colour any time you like, or blank off whole bits of the screen and start again.

Colours are very much easier to mix on a computer, especially on the Amiga: because of the way a TV or monitor display works, you can tweak the different red, green and blue parts of the signal to mix colours as finely and subtly as you want. Frankly, that alone can keep a clown like me absorbed for hours. And you

don't just have to splash solid colour on the screen: you can blend, chop and change colours at will.

Perhaps the biggest advance in paint programs ever was the idea of the custom brush. A custom brush is a part of the screen you pick up and use to paint with. The clever part is that custom brushes can be messed around in all kinds of ways, distorted and reshaped at will. It's also the closest thing you'll ever come to the old gag about Tartan paint!

If you've never been tempted to have a go at computer painting before, why not give it a try? It really is easier than you think. It's one of the Amiga's greatest talents, so it's a shame to waste all that potential: but it's also really not difficult at all.

THE GRAPHICS WORKSHOP WHY IS IT SO SPECIAL?

Not only does *The Graphics Workshop* have all the normal tools you would expect from a top *Deluxe Paint III*-style program, it also has a lot more. It can use 'Colour Areas' to give hundreds of colours on one screen. It features an 'Object' system which means parts of your picture can be placed and then moved later, without destroying what's underneath. It doesn't limit you to using just one custom brush, but allows you to pick up and store ten and use any of them at any time. It features not only ANIM and Animbrush forms of animation, but also a Cell system which is probably the most powerful animation system there is for the Amiga. But don't just listen to me telling you how good it is: try it out for yourself!



WHERE TO START

A quick note about loading and saving files. The load and save system is pretty straightforward and shouldn't cause problems, but there are two things to watch out for. If you press the Return key when a file requester is on the screen, it's the same as clicking OK. This may take a few *Deluxe Paint* users by surprise. Also please note that the program may request a disk called *Graphics Workshop*. If it does, simply click on Cancel and everything will be fine.



The image on this page, which I was pretty pleased with (I'm a novice myself at these things) was produced after I'd been using *Graphics Workshop* for only a couple of hours. In the immortal words of a certain Trenton Webb Esquire, "The nice thing about it is that even a complete idiot can produce something decent-looking". Thanks, Trenton.

I was fairly pleased with the colourful background, which really happened completely by accident as I was messing around with the various painting modes (see Page 29). And there's always the comforting thought that if you can't do something yourself, you can cheat.

The main cartoon character in our picture here, Tank Girl, was traced onto a piece of clear film which we stuck on the front of the monitor and copied. Simple. There are lots of ways of cheating in computer painting: but the nicest thing about it is that any individual will almost always, sooner or later, just by messing about, come up with something he or she is pleased with.

You've got one of the most advanced paint and animation programs there is sat in front of you: it's worth a full £79, but it costs you practically nothing. So what have you got to lose? Go on, give it a whirl!

GRAPHICS WORKSHOP

THE PAINTING TOOLS

Here's everything you need to know to get started: how to use all the tools on the menu bar to create pictures. It's all very easy indeed...

TITLE BAR

This displays information about the picture you're working on, including the resolution and the file size. When you're actually doing something to a picture it disappears, reappearing as soon as you finish the operation. This makes it quite handy to have, because you can tell when a complicated drawing operation has finished doing its stuff, rather than trying to rush on and confuse things. Sometimes, though, you'll want to start a drawing operation right at the top of the screen: in which case pressing the Delete key will make the title bar disappear. It reappears when you press Delete again.

FASTMENU BAR

This is the heart of the program, where all the drawing tools are located. It's a clever gadget, because it becomes 'active' as soon as you move the pointer over it (notice how the word 'Fastmenu' changes from being faint to solid).

This menu bar contains all the tools you need to draw pictures and these are all explained here in detail. Each tool is in a box in the group over at the left-hand side. The rest of the Fastmenu bar contains a colour palette for you to pick your colours from and various other colour-related bits.

The Fastmenu bar can get in the way during drawing, though anything you draw underneath it will come out on your picture. You can, however, move the menu bar up and down the screen by holding down the left mouse button with the pointer over the top bar of the menu bar. You can also make it disappear completely by pressing the Help key: and pressing Help again will make it reappear.

All of the drawing tools are explained here, but it's worth mentioning now that you pick the tool you want by clicking on it with the left mouse button. Some tools are split: they do different things if you click on the top to if you click on the bottom half. When you've finished using a tool, or if you decide you don't want to use it after all, simply click on another one.

Some tools also switch to another function if you click on them with the right mouse button, in which case a requester box appears allowing you to change something. These are all explained with the tool descriptions which follow.

DOTTED FREEHAND



Simply hold down the left mouse button while drawing, and your line will be drawn as a series of dots. If you go slower, the dots will be close enough to join up: if you go quicker, they will be further and further apart.

GfxWorkshop: 0/0:0:320/256



FASTMENU



CONTINUOUS FREEHAND



Top half: hold down the mouse button and draw any old shape and it will be filled with solid colour when you release the button. Notice that the thickness of the brush you are using doesn't affect filled shapes.

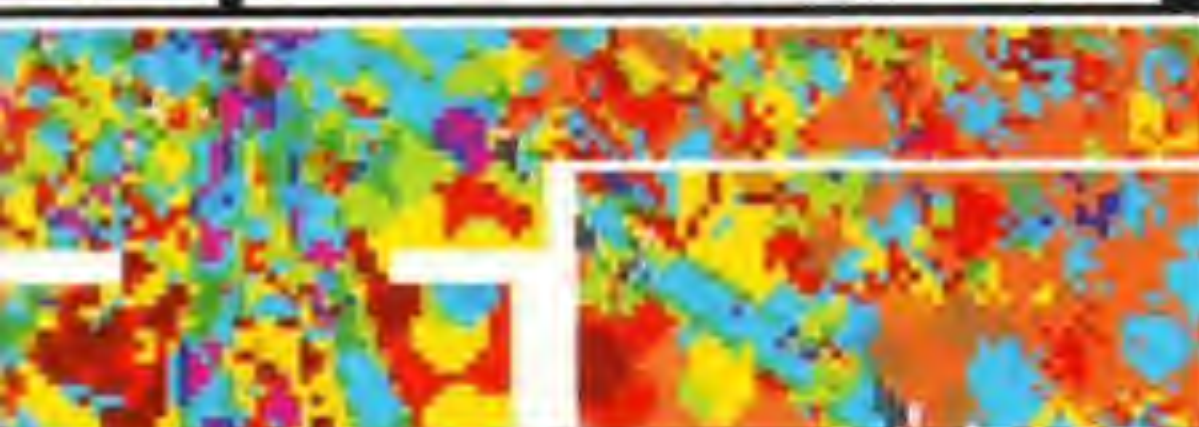
STRAIGHT LINE



Hold down the left mouse button and the start point of the straight line will be fixed on the screen. Then you can move the mouse anywhere on the screen and the line will follow the cursor around. When you're happy with the line you can finally release the left mouse button and your straight line will be drawn.

ORKSHOP

3757424



RAYS



Click with the left mouse button to set a centre point. Move the mouse until you're happy with the length of the first ray, then hold down the left mouse button and move the mouse in a sweep. When you've drawn enough, release the left button then click the right mouse button to finish.

CURVE



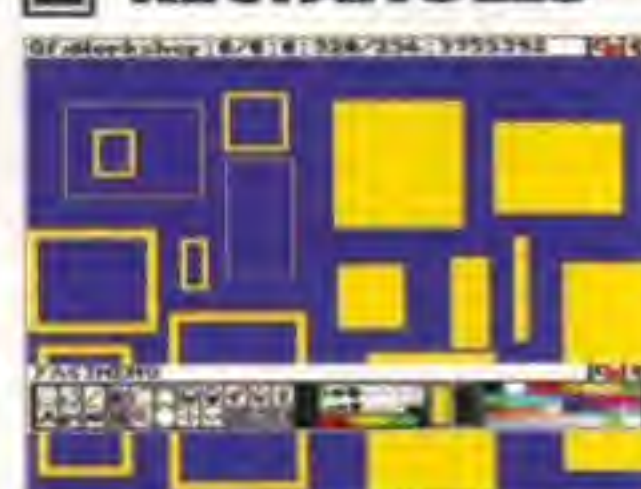
This is a four-point Bezier or rubber-band curve. If that sounds complicated, don't worry. It isn't. It's just very

effective. Hold down the left mouse button and the start point of your curve will be fixed. Move the mouse until you reach the end point of your curve, then let go of the button and a line will be drawn.

If you now move the mouse again, you'll be able to drag the line out into a curved shape. When you're happy with it, click the left mouse button. Move the mouse again, and again the curve will be drawn out in another direction. Click the left button to complete the drawing operation.

Note that clicking with the right mouse button on this tool will bring up the Set Size requester, where you can choose how accurate your curve should be.

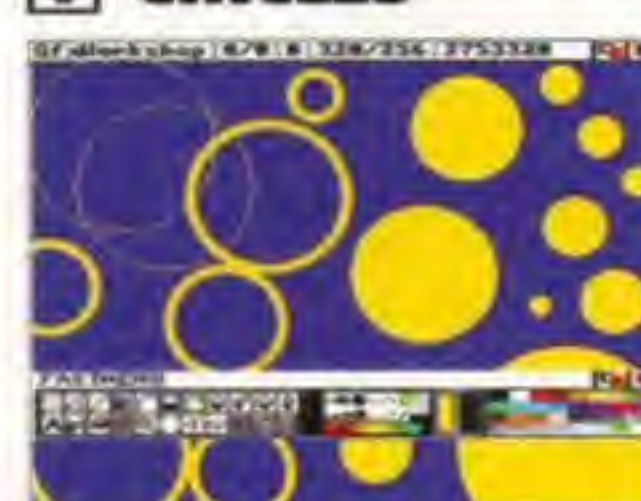
RECTANGLES



Top half: hold down the left mouse button and the top-left corner of a rectangle will be fixed. Move the mouse until you're happy

with the size and shape, then let go, and an outline rectangle will be drawn. Notice that using a round brush gives you rounded corners; use a square brush if you want square corners. **Bottom half:** exactly the same except that when you release the mouse button, the shape is filled with solid colour. Notice that the thickness of the brush doesn't affect filled shapes.

CIRCLES



Top half: hold down the left mouse button and the centre point of a circle will be fixed. Move the mouse until you're happy with the



size, then let go, and an outline circle will be drawn. **Bottom half:** exactly the same except that when you release the mouse button, the shape is filled with solid colour. Notice that the thickness of the brush doesn't affect filled shapes.

ELLIPSES



Top half: hold down the left mouse button and the centre point of an ellipse (oval) will be fixed. Move the mouse until you're

happy with the size and the shape, then let go, and an outline ellipse will be drawn. **Bottom half:** exactly the same except that when you release the mouse button, the shape is filled with solid colour. Notice that the thickness of the brush doesn't affect filled shapes.

IRREGULAR POLYGONS



Top half: click with the left mouse button to set the first point. Wherever you move the mouse after that, a line follows. Click with the

left mouse button each time you want to set a line, then when you're happy with your shape click with the right button to finish drawing. Note that the shape you draw does not have to be closed (joined up). **Bottom half:** exactly the same, except when you finish the shape will be filled with solid colour. Notice that the thickness of the brush doesn't affect filled shapes.

REGULAR POLYGONS



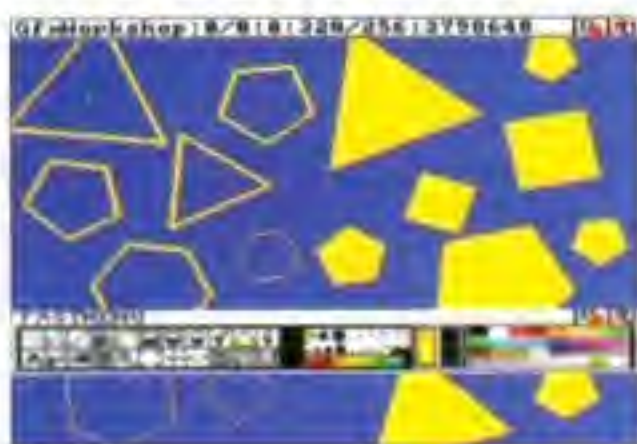
Top half: hold down the left mouse button and the centre point of your shape will be fixed, then drag out the shape until you're

happy with its size. Let go of the button and move the mouse around to rotate the shape; then click once with the left button to fix it.

Bottom half: works exactly the same way, except when you finish the shape will be filled with solid colour. Notice that the thickness of the brush doesn't affect filled shapes.

Note that clicking with the right mouse button on this tool will bring up the Set Size requester (see the picture, above, under the heading of Curves: see also the full explanation of the Set Size Requester which follows below), where you can choose how many sides your shape should have.

DISTORTED REGULAR POLYGONS



Exactly the same as for regular polygons, except that when you drag out the size of the shape you can also squash it or stretch it.

Note that click-

ing with the right mouse button on this tool will bring up the Set Size requester, where you can choose how many sides your shape should have.

TEXT

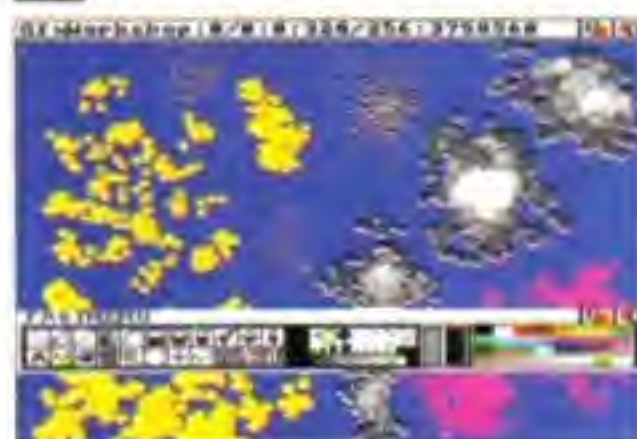


Simply place the square cursor on the screen and type in your words. Note that it is a good idea to move to a new line by pressing the Return key when you're getting near the edge of the screen.

Clicking on this tool with the right mouse button will bring up

a requester allowing you to pick the font (typeface) you are using from any you have installed in your system and to set a couple of text styles.

AIRBRUSH

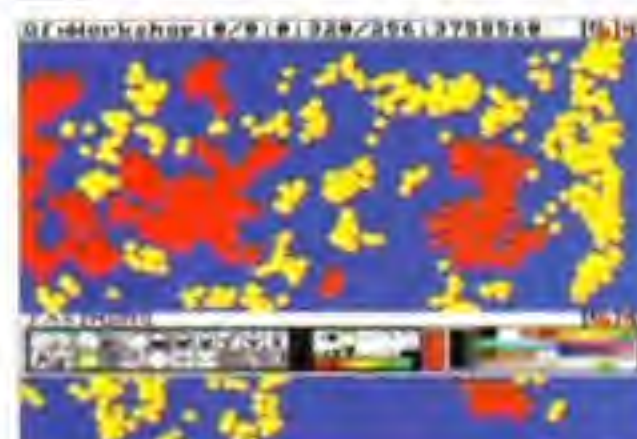


Top half: the airbrush simply 'sprays' the current brush randomly around where you're drawing as long as you hold the left mouse

button down. **Bottom half:** the cumulative airbrush is a bit cleverer. It starts off spraying in the colour you've chosen, but each time you pass over a colour it moves it to the next one in the palette range. This lets you build up colour on an area in a fairly realistic way.

Note that clicking with the right mouse button on this tool will bring up the Set Size requester, where you can choose how quickly your airbrush sprays.

FLOOD FILL



This is used to fill in any areas of continuous colour by 'flooding' the new colour into it. Notice the way that it will fill in any areas

of the same colour, so long as they are joined by as much as a single pixel of colour.

Clicking on this tool with the right mouse button brings up the Set Fill requester. This is explained in full in a separate panel on the following page of this article (Page 26).

GfxWorkshop: 0/0:0:320/256:



FAS TME N I



THE GRID

Clicking on this makes everything you draw snap into position on an invisible grid. It's handy for lining up the edges of squares, for instance.

ZOOM (MAGNIFY)



Allows you to zoom in on an area to work in fine detail. Either just click on the area you want to

magnify with the left mouse button, or hold down the left mouse button and move the rectangle that appears until it surrounds what you want, then release the button. Note that you close the Zoom Window by clicking in the small box in the top-left corner.

BRUSH PICK-UP



Brushes are a very important part of modern paint and animation programs. Basically, the brush pick-up tools



allow you to cut out a chunk of the screen and use it to paint with. **Top half:** lets you drag out a rectangle across the area you want to cut out, like the example portion top right of the screen. **Bottom half:** lets you draw a freehand line round whatever you want to cut out, like the example on the left of the screen.

Note that the first colour in the palette is always transparent, which means it will not pick up on a brush. You should choose this colour carefully.

CROSSHAIRS

Lines stretch up and across the screen from the cursor, which can be a big help in positioning things carefully.

COORDINATES

The current position of the cursor is displayed as coordinates in the top left of the screen. Again, this can be a big help in positioning things carefully.

THE PALETTE

Click on this tool to bring up the palette. Here you can change any of the colours by simply clicking on the



block of colour you want to change and moving the sliders at the top of the screen. There are two sets of sliders; the RGB ones alter the amount of red, green and blue in the colour, while HSL alters separately the Hue (colour), saturation (amount of that colour, fading to grey) and lightness (fading from black to very, very bright). try them out to see the effect: HSL is a great way of mixing really subtle colours.

Click on SPRD then click on a start and end colour and all the colours in between will be altered to make a range of shades between those two. Click on COPY then click on a colour block to copy the current colour to that block. Click on SWAP then click on a colour block to swap the current colour's position with the one you just clicked on. Click on a colour then on MIX then on another colour to mix the two together.

Ranges are quite important for colour fills and for the cumulative airbrush. You can set up to 8 ranges on the same palette. Decide which range to set by clicking on the appropriate number. Then set a range by clicking on RANGE then clicking on the start and end colours you want in the range, each of which will then be highlighted by a small box.

The vertical slider on the top right of the palette determines how fast colour cycling goes.

SPECIAL PALETTE COLOURS

There are three colours in the palette which affect more than just the colours in your picture, and it's worth being aware of what they do. The first colour in the palette is always transparent, which means that if you pick up a brush it will not be picked up and you will be able to see the screen through the parts of the brush where that colour would be.

The first colour is also used by the text in the menu bars and by the borders around the screen, while the second colour is used as the background for the menu bars and so on. If you do change these colours, make sure you keep a large contrast between them: or you may have trouble reading the options on the screen.

The second to last colour is the colour used to highlight selections in the Fastmenu bar. It can be useful to make this a nice, bright colour to stand out clearly: we used a noticeable bright green.

UNDO

Click on this to Undo the last thing you did. Undo will only work if you've not clicked the mouse button at all since the thing you want to undo. It's a sensible idea to get used to pressing the u key on the keyboard when you want to undo mistakes.

CLEAR

Clears the screen. Click on it once with the left button and the cursor will change to the word CLEAR. Whatever colour you click on next, whether it's in the palette or on the screen, will be the colour that the blank screen becomes.



BUILT-IN BRUSHES

Just click on one of these built-in brushes to draw with it. Some are more interesting than others.

FOREGROUND COLOUR

This shows the current foreground colour (draws with the left mouse button). To change this, you can click on this box then click anywhere on your picture or on the palette to choose the new colour. Alternatively, just click with the left mouse button on the colour box to the right of the Fastmenu bar.

MIXED COLOURS

You can create mixed foreground colours which are a chequered pattern of two colours. Select the first colour as normal, then select the second colour by clicking on it with the right mouse button. The mix will appear in the Foreground colour box.

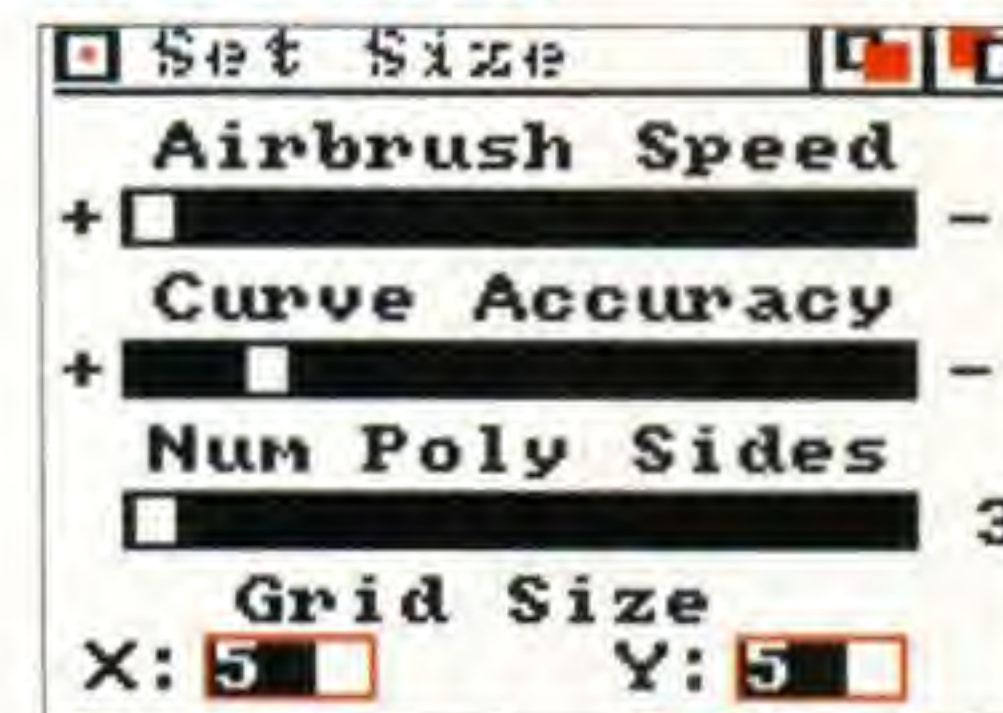
BACKGROUND COLOUR

Choose a background colour (the one that draws with the right mouse button) by clicking on this box then clicking on the colour you want, anywhere on the screen.

RANGE DISPLAY

Shows the rest of the colours that are in the same range as the current Foreground colour.

THE SET SIZE REQUESTER



This requester appears when you use the right mouse button to click on either the regular polygon tools, or the curve tool, or the grid tool, or the airbrush tool.

It's used to create new settings for those tools. It's really completely self-explanatory: all you have to do is adjust the relevant value using the sliders or, in the case of the grid, by typing in a new value.

The default setting for the airbrush is as fast as possible, and generally you'll want to leave it there. The accuracy of the curve is also at maximum: reducing it will make your curves less precise, but it also speeds things up when drawing them.

The maximum number of polygon sides is 20, which is in fact pretty much a circle. The grid size is expressed in pixels.

THE SET FILL REQUESTER



There are three extremely interesting and important options here. The first is Solid: this makes sure that any filled shapes or flood fills are done in a single, solid colour. You'll need to click on this to revert to an ordinary fill after you've been doing something fancy.

Second is Pattern. To use a pattern, you pick up part of the screen as a brush. Then click on Pattern in the Set Fill box, choose one of the numbers to store your pattern under by clicking on it and click on Store. The pattern from the brush will appear in the box on the right of the requester, and any fills you do will use the repeating pattern from the brush. You can also store up to 9 patterns simply by



clicking on one of the numbered boxes and clicking on Store. Free will remove a stored pattern.

Third, there is dithered fill. This uses whichever range of colours the current foreground colour belongs to and draws the whole range into whatever solid shape you are drawing. You can set the direction of the bands of colour by using the arrows, and also change the dithering (the break-up of colours between each join) by moving the slider at the bottom of the box.

The only drawback is that you cannot do a Flood Fill with a dither or a pattern in. The fancy fills do, however, work with all the filled shape tools.

OTHER DRAWING TOOLS

There are a number of other drawing tools hidden away on the Pictures menu. Here's a look at what a couple of the options from this menu do, without getting too heavily into stuff we'll cover over the page...



MANIPULATE

Tucked away on the Picture menu, the one you'd expect to have all the boring load and save functions but very little else, is a menu option called Manipulate. If you drag the mouse pointer over it a sub-menu drops down with a whole array of interesting extra things you can do to your picture.

You're best left to experiment with these for yourself: remember, if you're messing about either work on a copy of a picture or use the Undo feature after you make a mistake. Here's a quick run-down of what the various options do.

Make B&W simply turns everything you drag the box over into black and white. **Make Grey** does a similar trick, but with four levels of grey.

Trace simply looks for areas of the currently-selected Foreground colour and fills them in with the background colour, leaving only an outline in the original colour. **Trace All** does exactly the same for the whole picture.

Move and **Copy** allow you to select a portion of the screen and do just that to it, while the **Flips** and **Halves** let you select a piece of the screen which is then flipped vertically or horizontally or reduced in size.

GRAB

This lets you grab any screen that is currently open on your multi-tasking Workbench. All you have to do is choose the Grab option, click the screen you want to the front and press the Return key. A requester will check that you want to work in the same mode as the screen, then the screen you chose instantly becomes a picture that you can work on. Clever stuff!

GRAPHICS WORKSHOP KEYBOARD SHORTCUTS

FASTMENU

d	Dotted Freehand
s	Continuous Freehand
S	Filled Freehand
l	Line
L	Ray
w	Curve
r	Rectangle
R	Filled Rectangle
c	Circle
C	Filled Circle
e	Ellipse
k	Polygon
K	Filled Polygon
t	Regular Polygon
T	Filled Regular Polygon
a	Airbrush
f	Flood Fill
/	Zoom
n	Grid Snap
}	Crosshairs
{	Coordinates
u	Undo
b	Brush Pick Up
B	Use Custom Brush
F	Set Fill Panel
:	Modify Palette

DRAWMODE

F1	Trans
F2	Copy
F3	Colour
F4	Colour Replace
F5	Range Replace
F6	Cycle Per Range
F7	Cycle Per Line
F8	Smear
F9	Dither
F10	Rub Thru
Shift-F1	Shadow
Shift-F2	AB Line
Shift-F3	Set

MANIPULATE

m	Move
M	Copy
<	Flip X

BRUSH

.	Flip X
:	Flip Y
h	Handle
i	Filter
o	Draw Outline
O	Erase Outline
J	Half XY
J	Double XY
g	Rotate 90 Degrees
G	Rotate Last Angle

OBJECT

z	Add New Object
Z	Add Brush Object
Tab	Select Object
Esc	Object Modify Mode on
[Move Object Up (In Object Modify Mode)
]	Move Object Down (In Object Modify Mode)

COLOUR AREA

Activate Palette Area

STENCIL

-	Make Colour Stencil
=	Draw Bit Stencil
+	Move Bit Stencil
l	Active Stencil Toggle
l	Filter Bit Stencil

PAGE ANIMATION

Left Arrow	Previous Page
Right Arrow	Next Page
Up Arrow	First Page
Down Arrow	Last Page
1	Add-Copy Page
1	Set # of Pages
2	Kill Page
3	Page Rate
9	Play Page Animation
Space	Stop Animation

ANIM-EFFECTS

0 and . Move +Z and -Z
(In Set Start/End)

CELL ANIMATION

Shift-Left Arrow	Previous Cell
Shift-Right Arrow	Next Cell
	Play Cell Animation
Space	Stop Animation

CELL-EFFECTS

Keypad 1 to 9

Place HotPoint

Arrow

Scroll Frame In Active Display Box

SELECT FONT MACROS

Left and Right Arrows
Scroll Through Character Set

PERSPECTIVE CONTROLS

Keypad 7 and 9

Rotate X and -X

Keypad 4 and 6

Rotate Y and -Y

Keypad 1 and 3

Rotate -Z and +Z

Keypad 8, 5 and 2

Reset X, Y, and Z

Enter Reset Z

FILTER MACROS

Space Remove Colour

OTHER MACROS

x	Swap Spare Editing Area
X	Copy to Spare Editing Area
p	Print
v	Editing Area Size
?	Resolution Requester
:	Colour Cycle
Del	Title Bar On/Off
Help	FASTMENU On/Off
q	Quit

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GRAPHICS WORKSHOP A HOST OF EXTRAS!

Not only does it feature all the usual drawing tools – and pretty stunning ones – but also, Graphics Workshop is hiding a host of extraordinary features...

COLOUR AREAS



One unique feature of *Graphics Workshop* is that it allows you to imitate the Copper colour-bar effect found in games. This means that you can change the palette as you move down the screen, effectively giving you the ability to paint pictures in hundreds of different colours.

The way it works is this. All the options for Colour Areas are on a sub-menu of the Pictures menu. Select Active and a tick will appear next to it, showing colour areas can now be used. Select New Area and you will be able to draw a box on the screen. All colour areas must be the full width of the screen. Now go for Select

from the menu and click on the area you just drew. Click on the Palette icon on the Fastmenu and you will find you can change all the colours in the palette: but when you put the palette away, only your recently-created colour area will show the new colours.

It's simple enough, provided you use the options in the menu carefully to make sure you know which colour area you're working in at any one time. It's a good idea to make sure that each time you create a new colour palette for an area, you leave a few colours at the start of the palette the same. Any colour that is the same in every palette in every colour area, you will be able to use across the whole of your picture. Again, experiment until you have a good grasp of what's going on. It doesn't take long to catch on to.

THE BRUSH MENU

All of the options in the brush menu are pretty self-explanatory, and all have to do with 'custom' brushes, ones you've picked up from the screen. You can store up to 10 in the library and select any one to use at any time. Again, try experimenting with the options.

BACKGROUND LOCK

This clever feature from the Extras menu means that you can load up a picture then 'lock' it as the background. Whatever you then draw, when you clear the screen the original picture will be restored. Very handy for trying out ideas.



STENCIL



Stencils are very useful in computer painting. By sheer good planning, *Graphics Workshop* has two kinds, both of which live on the Extras menu.

The Colour Stencil allows you to pick out any number of colours from the palette which will not be affected by anything you draw on the screen. In the picture above, all the colours that occur in Tank Girl's face were locked in a colour stencil, so that when we drew a large red block on the screen her face still showed through. Any occurrences of the same colours in the background were also immune, however: which is a good example of when you might need the other kind of stencil.

The other kind of stencil is a Bitmap Stencil. When you select this option, you can draw a line, with the left mouse button held, round any area of the screen you want to be protected from painting. Click the right mouse button to finish. The funny starfish-like shape on the right of the screen shown in the picture above is an area protected by a bitmap stencil from the red block drawn over the background.

OBJECTS

These are another unique and very clever feature of *Graphics Workshop*. Objects are small areas of the screen that act independently of the main picture. What's so neat about them is that you can draw something on the screen as an object, then move it around or delete it leaving the picture underneath untouched!

All you need to do to create an object is select New from the Object menu and draw a box for it. You will then be able to draw what ever you wish inside the shape. Pressing the Escape key then switches you to Object Modify mode, allowing you to move your object around the screen.

With several on the screen, objects can be selected using the Tab key. When an object is not selected, if it contains the transparent colour it will allow the background to show through. This is extremely useful for placing things like game sprites over a background picture, and it's also immensely useful in animation. Objects can also be grouped and moved around the screen together.

There's not enough space here to give a full explanation of how objects work: again, trying things for yourself is the best bet.

THE MODES MENU



The different painting modes can be selected here. The normal mode, and the one you want to make sure to return to after trying fancy things, is Solid. The others you should try playing around with to see what happens. The background in our main Tank Girl image was created by playing around with lots of different modes, one after the other, building up a real riot of colour.

How many of you remember films like *Tron* or *The Last Starfighter*? These two films relied heavily on the use of computer animation to depict their futuristic, hi-tech feel, the designers utilising state-of-the-art computer systems such as the mighty Cray to make everything as smooth and impressive as possible.

At the time it was thought that this kind of animation power was well beyond the possible range of home users, the power needed to produce the slick graphics seeming well set in the 'professional tool' arena. A few years on, however, the advent of the cheaply-produced 16-bit processor meant that home machines, and especially the Amiga, could bring a taste of this power to home users.

THE ELECTRONIC PENCIL

Programs such as Electronic Arts' *Deluxe Paint* showed that impressive visuals could be created on the Amiga, and it wasn't long before Amiga users could start bringing their pictures to life using programs like Broderbund's *Fantavision*. Although the animation style achieved by early programs was fairly basic, it opened a new world of presentation and entertainment to home computer users.

Better programs began to appear on the scene, including *Deluxe Video* (an animation system from Electronic Arts to complement their own *Deluxe Paint*) and *MovieSetter* from Gold Disk. These allowed the user to produce cartoon-style animations by combining backgrounds with cell animations.

Cell animation involves laying characters and objects on top of backgrounds in rapid succession (much the same as pen and ink cartoon animations) to produce movement. This style of animation gives a great deal of freedom and is still used in many programs today (including *Graphics Workshop*).

As well as allowing you to move cartoon shapes around over fixed backgrounds, these programs also allow you to carry out some flashy effects, such as scrolling the scenery to add movement to a scene or even use a variety of 'wiping' effects to fade from one scene to another. You could also create longer pieces by stringing animation files together, each loading in succession to produce an entire 'film'.

Soon enough, people started wanting more from animation systems, so software developers began coming up with new ideas and combinations to satisfy all the budding Rolf Harrises and Walt Disneys of the

AT THE M

All this talk of animation using Graphics Workshop may be a little bewildering if you don't know your pixels, don't you think? Maff Evans takes a peek into the electronic animation studio and runs through the ideas behind computer animation.

Amiga world. The fact that images had to be drawn on one program and loaded into another to get them to move proved rather a bind to many people, so by the time Electronic Arts released the third incarnation of *Deluxe Paint*, lo and behold it included animation.

The way that *DPaint III* moved its images was a combination of page-flipping animation (showing screens one after another to create movement) and the more usual cell animation system. Brushes could be picked up (even brushes with multiple animation frames, thanks to *DPaint III*'s Animbrush feature) and moved in a predefined pattern across a background, with the resulting animation being played by flipping through the screens. This meant that you could work in a very flexible way, using techniques from cell animation and combining them with the freedom of being able to draw changes on your animation frames 'on the fly'. This system has proved very popular with most animators, and is the method whereby most animation (including games) are designed.

BACK IN THE REAL WORLD

This kind of animation is all well and good for creating fancy titling and cartoon-style clips, but what if you want to achieve a higher level of realism?

One way to emulate realistic solid objects is to use ray-traced animations. Programs such as *Sculpt-Animate* and *Real 3D* allow you to construct three dimensional objects, give them a realistic surface, including reflections and shading, and then animate them through a series of predefined moves. With a little care you can make it seem as though a real 3D world full of objects exists behind the screen, simply by moving some raytraced shapes.

If you want to capture scenes from the real world, then systems such as VIDI Amiga from Rombo or Datel's Video Digitizer may be for you. These allow

you to capture images from TV, VCR or a video camera and store them as a sequence of frames. You can then flip through the frames to produce a short film using live action!

Another way of simulating the real world on your machine is to make use of the new-fangled fractal mathematics. Using a program like *Scenery Animator* or *Genesis* (reviewed in this month's *Amiga Format*) you can create incredibly realistic landscapes and move a camera through them to create a helicopter fly-past-style animation. By loading this into *Graphics Workshop* you can add cars, planes, helicopters or space vehicles to the clip to create a highly impressive film-like show – all using numbers and graphics!

SHOWING OUT

Once you've created your moving masterpiece, you'll no-doubt want to show it off to people, so an animation player is in order. Programs such as *DPaint 4* and *MovieSetter* contain programs which allow you to create stand-alone disks to run animations, but what if you're using a program that doesn't include a player?

Have no fear! The public domain is here. If you've ever seen a PD animation, you'll more than likely have access to a player program. Eric Schwartz clips are generally played using the *MovieSetter* player, whereas another favourite is Sparta's *ShowAnim*, created by Gary Bonham, the inventor of the ANIM file format. This program allows you to play any animation which uses the ANIM file format (including *DPaint* and *Graphics Workshop* clips) on their own, without having to load them into an animation program.

THE GALLERY

If you want to know what kind of things are possible, then check out the PD demo scene. A whole host of animation disks are to be found in the PD libraries,

ANIMATION IN GRAPHICS WORKSHOP

If you peruse the Anim menu of *Graphics Workshop*, you will find a number of tools to use in creating animations. You can work in either cell animation or page-flipping modes, combining the effects to produce your final masterpiece. Page-flipping is simply showing one screen after another in succession to give the impression of movement, much like the old 'What the Butler Saw' machines of yesteryear. Cell animation involves setting up portions of objects (such as an arm, head or body) and laying down the frame of the section you want to move when needed. In the final clip, this will look like a very complex movement, when it is really a collection of smaller, simple moves.

Load and Save allow you to store and retrieve cells or frame animations, which can be held in either normal or compressed format (thus saving storage

space). Set Up defines how your cell sequence or animation will play (forwards, backwards, in a loop and so on) and Animate shows the current sequence. New Cell and New Frame allow you to set up a new sequence, either as a brush, a normal picture or an object (which is basically a brush that can be picked up and moved without affecting the background). The Effects and Movement options are used to define rotation and movement paths, along with fades and ease-in/ease-out effects. In the Page section you can add or delete frames, jump to a particular section of your sequence, set the type of storage to be used, move frames around or even merge them together. After a while (and some experimentation) you will be able to combine these commands to produce some marvellous effects.



OVIES

covering a wide range of styles. One of the most notable PD animation artists is Eric Schwartz, who employs a cartoon style laced with humour to come up with simple yet entertaining demos.

Another chap who favours the cartoon approach is Steve Packer. Steve is responsible for the highly acclaimed Classy Animations series, featuring the cute character Chuck. He has recently started expanding his style to create more atmospheric pieces, but his earlier work shows what is possible with a simple program and a little patience.

For real state-of-the-art animations, it's over to Germany, where the man to

respect has to be Tobias Richter, author of many incredible raytraced anims, including innumerable *Star Trek* clips.

OVER TO YOU

Although this may still all seem rather complicated, with patience you could be creating some very fine animations. Try experimenting with animation styles and effects.

And if you're interested in showing off your Graphics Workshop creations, then try putting them out with *ShowAnim*. You never know - you could pick up a bit of a reputation as the next Disney!



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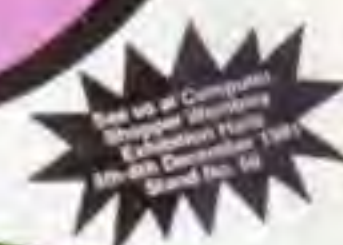
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